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An Empirical Analysis of Internet Banking Adoption in New Zealand

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A thesis

Submitted in partial fulfilment

Of the requirements for the Degree of

Master of Commerce of Management

at

Lincoln University

by

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Lincoln University, Canterbury, New Zealand

2011

Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of M. C. M

An Empirical Analysis of Internet Banking Adoption in New Zealand

By Junhua Du

Technological developments, particularly in the area of telecommunications and information technology, are revolutionizing the banking industry, including New Zealand's banking sector. These developments have prompted new delivery channels and banking systems including Automatic Teller Machine (ATM), telephone banking, personal computer banking (PC), and Internet banking. Internet banking has become one of the most rapidly diffused banking technologies. From a bank's perspective, Internet banking can reduce costs, increase the speed of service, expand the market, and improve overall customer service. From the consumers' perspectives, Internet banking can lower services fees, and allow customers to manage their finances more conveniently, anytime and anywhere. However, despite the efforts of the banking sector, numerous consumers are still not using Internet banking services. This research investigates the factors that affect consumers' adoption of Internet banking services in New Zealand.

The findings reveal that User-friendly Website, Marketing Communications, Perceived Risks, Price, and Internet Access/Internet Familiarity have an impact on customers' decisions to adopt Internet banking. The results also reveal that the Young Age and the High Income Groups are more likely to adopt Internet banking.

The results of this research will help banks and financial institutions to implement efficient services marketing strategies to increase the rate of Internet banking adoption, and in turn, increase banks' revenue and competitiveness. Furthermore, this research provides useful information for future researchers who study the links between customers' decision making and Internet banking.

Keywords: Internet banking, decision factors, logit analysis, New Zealand.

Acknowledgement

I would like to thank all people who helped and inspired me during my master thesis study. This thesis would not have been possible without the support of them.

First of all, I would like to express my deep appreciation to my main supervisor Mr. Michael D. Clemes, a respectable, responsible and resourceful scholar, thanking him for all the valuable guidance, advice, insightful discussions, patience, kindness, and encouragement throughout the research. I am also greatly indebted to Mike's tireless editing which was fast and thorough. Thank you to my associate supervisor, Dr. Christopher Gan, for his assistance and advice, especially in the data analysis process.

Thanks and love in abundance to my parents, who provided much support, both financial and emotional. Thanks for their endless love and support throughout my life. Special thanks to my partner, Zhou Shang, who helped, encouraged and entertained me when I am having hard times with my thesis.

Thanks to all my good friends, near and far, especially to Helen Zhang who assisted me with the initial statistical analysis. My appreciation also goes to my postgraduate colleagues and staff in the Commerce division for their support and assistance.

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Chapter 1 Introduction

1.1 Introduction

Since the 1970s, Electronic Commerce (E-commerce) has emerged as a new concept in the business vocabulary (Wigand, 1997). E-commerce refers to sharing business information, maintaining business relationships, and conducting business transactions using telecommunications networks. Traditional E-commerce, conducted using information technologies centering on electronic data interchange (EDI) over proprietary value-added networks, has moved rapidly to the Internet (Zwass, 1996).

The increasing popularity and interest in using the Internet is driven by its World Wide Web (WWW) subset and has created great opportunities for many organizations, from small businesses to large corporations, including financial institutions (Lallmahamood, 2007; Chau and Lai, 2003; Rashid and AI-Qirim, 2001). Banks are currently gaining several benefits from WWW technology (Lallmahamood, 2007). In particular, banks and financial institutions that have implemented WWW delivery of their services have captured a large share of the financial market (Tan and Teo, 2000).

Internet banking refers to the use of the Internet as a delivery channel for banking services, including traditional banking services such as balance enquiry, printing

statements, fund transfers to other accounts and bill payments (Frust, Lang and Nolle, 2000) and new banking services such as electronic regular payments and direct credit for salaries (Mukherjee and Nath, 2003). Internet banking has created new ways of banking in the main areas of distribution, production, payment and trading (Jayawardhena and Foley, 2000; Llevwellyn, 1997).

1.2 History and Evolution of Internet Banking

Banks operate in a strategic information system environment which indicates that they are information-intensive and highly dependent on information technology as their core technology (Broadbent and Weill, 1993). The developments in information technology have had an enormous effect on the development of more user-friendly banking services and increased the transaction and communication speed between banks and customers (Akinci, Aksoy and Atilgan, 2004; Giannakoudi, 1999).

The revolution of information technology in the banking industry began in the early 1970s, with the introduction of the automated teller machine (ATM) which was first installed by Barclays Bank in the United Kingdom (UK) (Introna and Whittaker, 2005; Giannakoudi, 1999). ATMs allow customers to deposit money, withdraw cash, request a balance and pay bills at any time. ATM services not only provide convenience for customers, but also decrease operating costs for the bank (Rose and Hudgins, 2008). However, ATMs lack personalized services and do not have the

ability to sell peripheral services, such as a mortgage plan (Rose and Hudgins, 2008). The next technology developed by banks was telephone banking which was firstly introduced by Seattle First National Bank in the United States (US) in the late 1970s (Shapiro, 1999). Telephone banking is more cost-effective than ordinary branch banking and the process increases customer convenience as well as expanding access to a wide variety of services for customers (Mols, Bukh and Nielsen, 1999). However, telephone banking lacks visual verification (Giannakoudi, 1999), and customers cannot perform self-banking activities by using telephone banking (Guru, Vaithilingam, Ismail and Prasad, 2000).

Owing to the popularity of personal computers, PC-banking was launched during the late 1980s and the early 1990s (Polasik and Wisniewski, 2009; Giannakoudi, 1999). The first bank to offer PC-banking was Citibank in the US (Shapiro, 1999). PC-banking requires its users to install propriety software on home computers and allows banking transactions and the accessing of account information with a bank's server in an offline mode (Polasik and Wisniewski, 2009; Shapiro, 1999). PC-banking is capable of delivering high-quality graphic pages (Shapiro, 1999) and increasing speed as well as improving the flexibility of business transactions (Guru et al., 2000). However, PC-banking is complicated to use and the closed system technology provides only a closed network, which is limited to existing clients (Chang, 2003; Mols et al., 1999).

Internet banking emerged in the 1990s and was first launched by the Wells Fargo bank in the US. There is a wide agreement that the channel has had a substantial impact on bank markets (Karjaluoto, Matila and Pento, 2002).

From the viewpoint of the banks, Internet banking helps banks to maintain profitable growth through reducing the operation and fixed costs (Hernando and Nieto, 2007; Chung and Paynter, 2002, Sathye, 1999). Jayawardhena and Foley (2000) reported that a simple transaction cost for a non-cash payment at a branch is likely to cost a bank as much as 11 times more than over the Internet based on a sample of New Zealand banks. Chung and Paynter (2002) estimated that an Internet transaction only costs a bank $0.05 while a paper transaction at a branch cost approximately $1. In addition, Internet banking enhances marketing and communication, as it serves 24 hours a day and a customer can be guided through a catalogue of products and services (Jayawardhena and Foley, 2000). Moreover, an Internet banking system allows banks to expand their business geographically without investing in the establishment of new branches and, as a result, the customer base is broadened (Giannakoudi, 1999).

From the viewpoint of consumers, Internet banking is attractive because of its convenience and lower fees. Internet banking users can perform financial transactions at anytime and anywhere without queuing at bank branches (Sayar and Wolfe, 2007).

Moreover, Internet banking offers lower fees or better rates on deposit and loans which enable the cost savings to be passed on to consumers (Polasik and Wisniewski, 2009). Furthermore, Internet banking provides customer rapid updating, richness-information (Palmer, 2002; Shapiro, 1999), speedy transaction access (Mavri and Loannou, 2006) and absolute self-service (Eriksson and Nilsson, 2007).

Internet banking has become one of the most popular banking channels and the decision to provide Internet banking is perceived to be a vital strategy for customer retention and remaining competitive for banks and financial institutions (Kim, Widdows and Yilmazer, 2005).

1.3 Consumer Beliefs about Internet Banking

The adoption of Internet banking has been a challenging issue for banks and the object of various academic studies (Karjaluoto et al., 2002). According to Athanassopuolos and Labrouko (1999), price, speed and the bank's reputation seemed to be important criteria for the adoption of Internet banking in Greece. Daniel (1999) concludes that in the United Kingdom, customers tend to value convenience, increased choice of access to the bank, and improved control over the banking activities and finances using Internet banking. Furthermore, consumers' regard accessibility, functionality and services at low price as important in Internet banking (Karjaluoto et al., 2002). Wang, Wang, Lin and Tang (2003) find evidence that

perceived ease of use, perceived usefulness and perceived credibility all have significant positive effects on customers' intention to adopt Internet banking in Taiwan. Gerrard and Cunningham (2003) find that Internet banking adopters compared with non-Internet banking adopters believe Internet banking to be more convenient, less complex, and more compatible. Lee (2009) notes that perceived risks, in terms of security/privacy risk is the greatest obstacle to Internet banking adoption. Lockett and Litter (1997) indicate that two negative attributes of Internet banking are risks and complexity, whereas the most important perceived positive attribute of Internet banking is 24 hours and 7 days availability. Furthermore, Gerrard, Cunningham and Devlin (2006) use a content analysis procedure and examine eight factors which explain why consumers are not using Internet banking in Singapore. In order of frequency, the factors are: perceptions about risk, the need, lacking knowledge, inertia, inaccessibility, human touch, pricing and IT fatigue.

1.4 Internet Banking in New Zealand

The New Zealand banking industry started in 1840 when the earliest European settlers arrived. From the beginning, legislation shaped New Zealand's banking industry and placed specific restrictions on the services bank could provide. Until 1984, the New Zealand banking industry operated under Government controlled economic conditions and was underdeveloped as the industry offered lower quality and more expensive services to bank customers. Since 1987, the deregulation programme in the banking

industry in New Zealand has removed the previous legislation and allowed banks and other financial institutions to freely develop their own strategies to meet bank customers' needs. Deregulation increased competition and boosted information technology and telecommunications evolution in the New Zealand banking industry (Willis, Dickens and Tripe, 2006).

The substantial upgrade of the telecommunication infrastructure and the high degree of computer and Internet penetration provided a favourable situation for the development of Internet banking in New Zealand (Chung and Paynter, 2002). Since Auckland Savings Bank (ASB) first introduced an Internet banking service in mid 1996, increasing numbers of bank institutions have been offering their Internet banking services in New Zealand. BankDirect commenced online banking in October 1997, followed by National Bank of New Zealand (NBNZ) and Bank of New Zealand (BNZ), both of which offered Internet banking in late 1999 (Barton, 2000). Australia and New Zealand Banking Group (ANZ) launched its website in the first half of 2000, Westpac Banking Group (Westpac) soon after and the TSB Bank (TSB) introduced Internet banking in early 2001 (Chung and Paynter, 2002). Kiwibank was the last bank to offer Internet banking in 2002 (Bruce, 2002; O'Connell, 2002). Among these banks, the ANZ, BNZ, ASB, WestpacTrust and NBNZ dominate the market in New Zealand as they control more than 90 percent of the online banking market (Taylor, 2002). In addition, the ASB, Westpac and NBNZ are the most popular banking

Internet sites (Neilsen, 2008).

The population of Internet banking users has rapidly increased since Internet banking was introduced in New Zealand. According to Taylor (2002), the number of Internet banking users was about 310,000 in 2000, and it increased to around 480,000 in 2001 (Taylor, 2002). Recent research shows that the number of Internet banking users reached over 1 million in 2008 (Neilsen, 2008; Statistics New Zealand, 2008). More than two thirds (68%) of Internet users accessed online banking sites in January 2008 which indicates that Internet banking has become a mainstream activity in the retail banking market in New Zealand (Neilsen, 2008).

1.5 Research Justification and Objectives

Although many consumers have turned to Internet banking because of its greater convenience, low cost, and speed (Kerem, 2003; Chang, 2003), numerous consumers are still not using Internet banking services due to several factors, such as lack of Internet access and perceived risks (Lee, 2009; Lichtenstein and Williamson, 2006). Gerrard and Cunningham (2003) point out that the relative success of Internet banking can be gauged by identifying the number of current users and anticipated future adopters. Hence, there is a need to understand the factors that influence customers' choices of Internet banking.

Several published studies have investigated the key determinants that affect consumers' adoption of Internet banking (Suki, 2010; Polasik and Wisniewski, 2009; Padachi, Rojid and Seetanah, 2007; Chiemeke, Evwiekpaefe and Chete, 2006; Gerrard et al., 2006; Eriksson, Kerem and Nilsson, 2005; Wang et al., 2003; Gerrard and Cunningham, 2003; Karjaluoto et al., 2002; Liao and Cheung, 2002). However, the key determinants are inconclusive for the New Zealand banking sector due to economic, social, political and cultural differences and there are limited empirical studies which have examined the main drivers underlying a customer's decision to adopt Internet banking in New Zealand. This empirical research is intended to fill this gap and focuses on the factors that influence customers' Internet banking adoption in the New Zealand banking industry. The study also examines if the results and findings are similar to previous studies.

The research objectives of this study are:

(1) To identify the factors that affect bank customers' adoption of Internet banking in New Zealand.
(2) To determine the most important factors that affect bank customers' adoption of Internet banking in New Zealand.
(3) To examine the impacts of demographic characteristics on bank customers' adoption of Internet banking in New Zealand.

1.6 Research Contribution

This study aims to make several contributions to the marketing literature in both the academic and managerial sectors of the banking industry. This study seeks to identify the factors that influence consumers to adopt Internet banking in New Zealand. Secondly, this study also determines the most important factors that affect customers' adoption of Internet banking. Thirdly, the study determines the impact that the demographic characteristics have on Internet banking. The findings of this research will enable banks to develop effective strategies to attract more customers to utilize Internet banking and this will help them maintain competitiveness in the New Zealand banking industry.

1.7 Structure of the Thesis

Chapter One provides an overview of Internet banking, the research justification and objectives. Chapter Two reviews the literature on adoption of Internet banking and examines the factors influencing customers' adoption of Internet banking. Chapter Three explains the variable selection, theoretical model formulation, and develops 18 testable hypotheses. Chapter Four details the methodology used to test the hypotheses. Chapter Five presents the empirical results. Finally, Chapter Six provides the conclusions of the research findings, implications, limitations and recommendations for the future research.

Chapter 2 Literature Review

2.1 Introduction

This chapter reviews the previous studies on the adoption of Internet banking and focuses on the major factors influencing customers' decisions to adopt Internet banking, such as Convenience, User-friendly Website, Internet Access, Internet Familiarity, Marketing Communications, Word-of-Mouth, Perceived Risks, Price, and Demographic Characteristics.

2.2 Internet Banking

2.2.1 The Definition of Internet Banking

Internet banking can be defined as the delivery of banking services to customers through the Internet network (Yiu, Grant and Edgar, 2007). At the basic level, Internet banking means establishing a Web page by a bank to provide information about its product and services (Daniel, 1999). At an advance level, Internet banking is the enabling of "transactional" banking services to customers over the Internet (Karjaluoto et al., 2002). Banking services involve: verifying account balances, moving funds from one account to another, confirming that transactions have taken place, ensuring checks have been cleared, placing orders for new cheque books, submitting applications for loans and credit cards, and carrying out bill payments

(Rose and Hudgins, 2008).

2.2.2 Studies on Consumers' Adoption of Internet Banking

Previous studies have identified a number of criteria that consumers consider important in the adoption of Internet banking.

Gerrard and Cunningham (2003) measure the factors relating to the adoption of Internet banking using a sample of Singapore consumers. The factor analysis results indicate that social desirability, compatibility, convenience, complexity, confidentiality, accessibility, economic benefits and computer proficiency are the influential factors of Internet banking adoption. Polatoglu and Ekin (2001) conduct an exploratory study of consumer acceptance of Internet banking in Turkey. The authors examine consumer-related factors, such as complexity, perceived risk and relative advantages, as well as organizational factor such as marketing effort that affect the adoption of Internet banking. The authors also find that young, affluent and highly educated groups are more likely to accept Internet banking than other groups. Jaruwachirathanakul and Fink (2005) identify factors, such as the features on the web site, perceived usefulness, and perceived behaviroual control that encourage consumers to use Internet banking services in Thailand. The significant demographic characteristics to Internet adoption are gender, educational level, and income. Wang et al. (2003) examine the determinants of user acceptance of Internet banking in Taiwan.

The results of the study demonstrate the significant effect of computer self-efficacy, perceived ease of use, perceived usefulness and perceived credibility on the consumers' behavioural intention to adopt Internet banking.

Polasik and Wisniewski (2009) identify five main factors affect consumers' decisions to adopt Internet banking: perceived security, Internet experience, marketing exposure, use of other banking products, and demographic characteristics in Poland. Padachi et al. (2007) use factor analysis to identify the factors that affect the adoption of Internet banking in Mauritius. The results of their study reveal that the most significant factor is ease of use and the other important factors are trust, cost of computers, Internet accessibility, convenience, and security. Sathye (1999) find there are six factors that affect the adoption of Internet banking by Australia consumers. In order of frequency, the factors are: security concerns, lack of awareness of the benefits of Internet banking, ease of use, price, resistance to change, accessibility to computers/Internet. Chiemeke et al. (2006) investigate the adoption of Internet banking in Nigeria and finds the main factors that inhibit the adoption of Internet banking are security and inadequate operational facilities including proper telecommunications and power. The author suggests that further improvements on security and provision of key ingredients of Internet banking including confidentiality, effective communication integrity and availability should be considered in order to satisfy customers' requirements and increase the rate of Internet banking adoption.

2.3 Factors Influencing Adoption of Internet Banking

2.3.1 Convenience Factor

2.3.1.1 The Definitions of Convenience

The American Heritage Dictionary (1992) defines convenience (noun) as “the quality of being suitable to one’s comfort, purposes, or needs” and as “something that increases comfort or saves work.” Convenient (adj.) has been defined as “easy to reach; accessible” and “suited or favorable to one’s comfort, purpose, or needs”. In the context of a service encounter, convenience has been described in terms of lifestyle, not having to travel, personal safety, and not having to wait (Lichtenstein and Williamson, 2006).

2.3.1.2 Convenience Dimensions and Services

There are various definitions of the convenience construct in the services marking literature. Among all of the definitions of convenience, Brown (1990) offers one of the most thorough views. Brown (1990) argues that convenience should be seen as a multidimensional construct. The concept of convenience is proposed to have five dimensions: time, place, acquisition, use, and execution (Brown, 1990).

Time dimension: Services may be provided at a time that is more convenient for the customer. For example: some banks are open 12 or more hours per week day and on

Saturday (Brown, 1990).

Place dimension: Services may be provided in a place that is more convenient for the customer. Providing services in the homes of customers is a common example (Brown, 1990).

Acquisition dimension: Firms may make it easier for the customer, financially and otherwise, to purchase their services. Accepting credit cards and developing credit plans are examples of this dimension (Brown, 1990).

Use dimension: Services may be made more convenient for the customer to use. Banking by electronic channels offers some customers increased ease in making payments and performing other financial transactions (Brown, 1990).

Execution dimension: The most obvious convenience is simply having someone provide the service. For example, banks have done well by providing electronic banking services which can help customers accomplish bank enquires (Brown, 1990).

2.3.1.3 Time-saving, Effort-saving and Convenience

Convenience was originally understood as ease of acquisition and convenience in purchasing, for which minimal physical or mental effort or time was required

(Copeland, 1923). The growth in the demand for convenient services and goods results from the view that time is a scarce and valuable resource (Anderson, 1971). As economic theory explains, regardless of income or wealth, a person has only 24 hours in any given day. Time cannot be stockpiled and vanishes constantly and irreversibly. Time's value derives from its scarcity (Voli, 1998). Becker (1965) suggests that the scarcity of time influences the demand for time-saving goods and services. Brown (1990) states that time-saving is not a separate dimension of convenience. Saving time may be a benefit of a convenient service and the reason a consumer is interested in the service (Brown, 1990).

Effort can be defined as the amount of energy put into a behavior or series of behaviors (Mohr and Bitner, 1995). In a common sense, effort is equated with "really trying" with "putting a lot into" the situation (Mohr and Bitner, 1995). Consumers' energy expenditure or effort is considered to be a distinct type of non-monetary cost that, like time, influences perceived convenience (Berry, Seiders and Grewal, 2002). Effort-saving can be viewed as a part of a consumer's motivation which directs consumer behavior for convenience consumption (Anderson, 1971).

2.3.1.4 The Importance of Convenience

Anderson (1972) notes that convenience may influence consumption behavior. Service convenience is also seen as instrumental to consumers for determining the

choice of a service and evaluating a firm's service performance (Mohr and Bitner, 1995; Anderson, 1972). In consumer services research, convenience has increasingly been recognized as a salient product attribute and as a basis for making purchase decisions (Voli, 1998).

Convenience is one of the key issues surrounding customer acceptance or rejection of a channel (Bucklin, 1966). Wan, Luk and Chow (2005) empirically confirm that convenience has a significant impact on customers' adoption of banking channels in Hong Kong. Likewise, adoption research, which has been conducted on self-service technologies used in banking, has identified convenience as one of the most important factors. (Black, Lockett and Ennew, 2001; Polatoglu and Ekin, 2001; Suganthi, Balachandher and Balachandran, 2001; Loudon and Della Bitta, 1993).

2.3.1.5 Convenience Factor in Internet banking

Convenience is one of the most beneficial features of Internet banking (Liao and Cheung, 2002; Daniel, 1999). People can bank online to pay bills, check balances, transfer funds, apply for auto loans and mortgages, and use other complementary services at the tip of a finger anytime from anywhere (Yu and Lo, 2007; Ramsaran, 2003). Lichtenstein and Williamson (2006) indicate that time saving and 24/7 access appear to be the most important aspects of the convenience of Internet banking services. Devlin (1995) explains that as people become more time and leisure

conscious, the convenience aspects of Internet banking will be increasingly valued.

2.3.2 User-friendly Website Factor

2.3.2.1 The Definition of a User-friendly Website

A website can be considered as an information system and the customer as an end-user of the information system (Jun and Cai, 2001). A user-friendly website refers to the fluency or ease with which a user is able to interact with an information system (Nantel and Glaser, 2008; Hiller, 2003).

2.3.2.2 User-friendly Website Measurements

Diniz (1998) argues that banks use websites to provide information, to conduct transactions and to improve customer relationships. A user-friendly bank website requires website usability which can be measured by: download delay, navigation, information content, interactivity, and responsiveness (Yang, Cai and Zhou, 2005)

Download delay, which is also called download waiting or response time, refers to the length of time the consumer has to wait, after clicking on a Website's URL, to be able to use the Website for specific activities (Dabholkar and Sheng, 2008; Palmer, 2002). On the client side, delays are due to bandwidth internet connection limitations. On the server side, delays are related to large numbers and sizes of images and limitations on

advanced software technologies (Rose, Evaristo and Straub, 2003).

Navigation reflects the website's capacity to help users to find the information and carry out operations easily (Palmer, 2002). Graphical design, layout, and actual content tools (home buttons, search for keywords, back to top buttons, help menu buttons) are the main components in providing the navigability of a bank website (Hernandez-Ortega, Jimenez-Martinez and Hoyos, 2007; Palmer, 2002).

Information content refers to use of text, graphics, and multimedia features to present information in a website (Palmer, 2002). An informative bank website can provide insight into the detailed and specific information with respect to products or services (e.g. prices, rates, loans), the company (e.g. mission, projects, balance sheet) or other relevant topics (e.g. recruitment, application forms, ways to contact banks) (Huizingh, 2000; Stamoulis, 2000).

Interactivity is defined as the availability and effectiveness of customers' support tools on a website, and the degree to which they facilitate two-way communication with customers (Srinivasan, Anderson and Ponnavolu, 2002). At a basic level, e-mail and feedback forms are methods by which a client can make suggestions and lodge complaints (Brown, 1990). Advanced technologies, such as videoconference may be also offered as a support to help customers make financial decisions (Diniz, 1998).

Responsiveness refers to the site ability to respond to user queries (Cyr, Head and Ivanoy, 2009). Responsive bank websites present feedback to customers and provide site managers with the ability to answer frequently asked questions (Palmer, 2002).

2.3.2.3 The Importance of a User-friendly Website

The website acts as a "window" that enables customers' initial interaction with the organization (Zhang and Dran, 2002). The features of user-friendly bank website such as quick response, easy navigation, richness of information content, and responsive interaction play important roles in increasing web users' satisfaction (Al-Hawari and Ward, 2006; Jayawardhena and Foley, 2000). This satisfaction increases the probability of obtaining loyal customers. On the other hand, a poor website design may prevent users from finalizing the desired transactions and, consequently, the users will not revisit the financial entity (Hernandez-Ortega et al., 2007).

In addition, a user-friendly bank website can be linked to attracting customers' intentions to purchase a financial service (Bai, Law and Wen, 2008; Waite and Harrison, 2004), perceived online system quality in the success of Internet banking (Jun and Cai, 2001), valuing efficiency of services (Padachi et al., 2007), inducing trust among customers (Bose and Leung, 2008), and enhancing banks' ability in financial performance (AI-Hawari and Ward, 2006).

2.3.3 Internet Access Factor

Internet access is a bundle of complementary services which at a minimum includes the services of a terminal and information transportation services to an Internet gateway (Bauer , Berne and Maitland., 2002).

2.3.3.1 The Market Growth of Internet Access

Internet access growth and potential market size are affected by a number of issues. The most directly relevant to this current study are:

Methods to access the Internet

Current access to the Internet is usually via computers. With the development of the technology, the Internet is available to be accessed through televisions or mobile phones (Papagiannidis, Berry and Li., 2006; Fan, 2005; Makki, Pissinou, and Daroux, 2003).

Places to access the Internet

Private homes and public facilities, such as a cyber café, are the main sources of Internet access. In addition, offices, institutions, and libraries also provide access to the Internet (Oyelaran-Oyeyinka and Adeya, 2004; Luyt, 2006; Sim and Koi, 2002).

Types of Internet access connection

Traditionally, connection to the Internet has been through dial-up connections. Recent research indicates that there is a fast growth in broadband access in most countries (Bauer et al., 2002). A dial-up service is typically provided through a telephone line and modem. However, this method has a limited capacity and relatively slow data transmission rates (28-56kbps) (GAO, 2001).

A broadband connection, provided by digital subscriber line (DSL), cable modem, fixed wireless, and satellite, offers transmission rates up to 20-50 times faster than a traditional dial-up connection so that downloading a web page is noticeably faster. Broadband is characterized by its "always on" nature which means that there is no wait to get online when the computer is on (Savage and Waldman, 2005).

Cost of Internet access

The cost of Internet access has two components. The first component is the cost of transport from computers to the Internet backbone which is typically paid to telephone and cable companies. The second component is the monthly subscription charge to Internet service providers (ISPs) who provide portals to the wide array of activities, information, and services available on the world wide web (Savage and Waldman, 2005).

In New Zealand, flat-rate subscription charges in 2009 ranged from NZ$10-NZ$27.95 per month for dial-up Internet access and approximately NZ$29.95-NZ$229.95 per month for broadband connection. Broadband charges depend on the amount of data usage in a month (Telecom, 2009; Telstraclear, 2009). Lowing access cost to the Internet may potentially lead to an increase in the number of users (Chaudhuri, Flamm and Horrigan, 2005)

Cost of computers

The decrease in the price of computers has improved the affordability of the equipment necessary for Internet access (Chaudhuri et al., 2005)

Perceived value of the Internet

Consumers must believe they need and will use the Internet before having the intention of going online (Chaudhuri et al., 2005). As new networks are added to the Internet and more people share their knowledge, the value of the Internet and its usefulness to the users is expected to increase (McCarthy, 2000).

2.3.3.2 The Growth in Internet Activities

People's everyday activities have changed with the growth in the number of people with internet access and the increase in the range of transactions that can be accomplished online. People can conduct a greater range of activities in Internet

cyberspace, which mainly includes e-mailing, Web surfing, watching movies, listening to music, chat rooms, online auctions, online shopping, and online banking (Ren and Kwan, 2008). Among these activities, Doesburg (2005) finds that in New Zealand, online banking was the most common commercial activity when private individuals use the Internet.

2.3.4 Internet Familiarity Factor

2.3.4.1 The Concept of Familiarity

Alba and Hutchinson (1987) define familiarity as "the number of product-related experiences that have been accumulated by the consumer." Luhmann (1988) maintains that familiarity is the knowledge people have of a product or service, based on their experience and previous contacts.

Familiarity, related to experience, has a positive effect on the degree of consumer skill and favors an increase in the individual trust in one's own abilities (Flavián, Guinalíu and Gurrea, 2006). Alba and Hutchinson (1987) note that an increase in product familiarity results in an increase in consumers' ability to perform product-related tasks successfully. More specifically, familiarity reduces the cognitive efforts required to perform the tasks as well as improving consumers' ability to analyse information, to elaborate on given information, and to remember product information (Alba and

Hutchinson, 1987).

Familiarity affects consumer decision making and is considered to be a central construct with which to explain consumer choice processes (Johnson and Russo, 1984; Punj and Staelin, 1983; Park and Lessig, 1981). Flavián et al. (2006) illustrate that familiarity has a positive influence on the interest of consumers in a product or a service and makes the process of decision-making easier for experienced consumers. Experienced users have a good level of relevant knowledge and a high degree of attribute processing skill for the decision-making task in the medium (Bettman and Park, 1980). Park and Lessig (1981) emphasize that a high familiarity decision maker requires less decision time and is expected to have higher confidence in the choice than a low familiarity decision maker, owing to the high familiarity decision maker's greater product usage experience and ownership.

2.3.4.2 Familiarity in an Internet Banking Context

In the Internet context, familiarity has been loosely operationalised to mean experience in using the Internet in general (Mäenpää, Kale, Kuusela and Mesiranta, 2008; Rodgers, Negash and Suk, 2005; Corbitt, Thanasankit and Yi, 2003; Pechtl, 2003; Miyazaki and Fernandez, 2001). Ward and Lee (2000) argue that more experienced Internet users tend to search less and be more confident when operating online. Mandel and Johnson (1999) claim that the level of Internet experience has a

significant effect on consumers' choice and final preferences. Corbitt et al. (2003) find that there is a positive correlation between consumers' web experience and e-commerce participation.

Within Internet banking, Internet familiarity is important in understanding consumers' perceptions, attitudes and behavior in an online banking environment (Polasik and Wisniewski, 2009; Mäenpää et al., 2008; Lassar, Manolis and Lassar, 2005; Lee, Kwon and Schumann, 2005; Lee and Lee, 2001;). Lee and Lee (2001) emphasize that consumers' Internet familiarity improves the ability to use Web browsers appropriately and increases the confidence in using Internet banking technology. Internet familiarity can be measured by level of skills on the Internet, level of Internet comfort, experience in purchasing on the Internet (Lassar et al., 2005; Park and Stoel, 2005; Lee and Lee, 2001); the length of time that the consumer has been using the Internet (Polasik and Wisniewski, 2009; Lassar et al., 2005; Pechtl, 2003; Novak, Hoffman and Yung, 2000), and the intensity of Internet use in a certain period (Lassar et al., 2005).

2.3.5 Marketing Communications Factor

Marketing communication is the process of effectively communicating product (service) information or ideas to target audiences (Burnett and Moriarty, 1998). In a general sense, marketing communication is used to inform customers about services

provided by an organisation, to persuade customers that a specific service product offers the best solution to a customer's needs, to remind customers of service product availability, and to motivate customers to act (Lovelock, Patterson and Walker, 1998). The primary task of marketing communications is to ensure that prospective customers accurately perceive the services that are important to them and to influence customers' purchase decisions (Lovelock et al., 1998).

Marketing communications have various types of strategic forms and different forms have different capabilities, which result in different marketing exposure and consumer reactions (Burnett and Moriarty, 1998; Rossiter and Percy, 1987). A marketing communication strategy has been identified as a factor in the success of new consumer financial services (Easingwood and Storey, 1991).

In a banking context, the most widely applied forms of marketing communications are advertising and personal selling (Laskey, Seaton and Nicholls, 1992; Berry and Tantaka, 1990).

2.3.5.1 Advertising

Advertising is defined as "any paid form of nonpersonal presentation and the promotion of ideas, goods, or services by an identified sponsor" (Mill, 2007, p. 83). Advertising may come in the form of mass media such as television, newspaper, radio,

magazines, yellow pages and the Internet (Mill, 2007).

In a service context, advertising is most commonly used to create awareness and stimulate interest in the service offered, to educate customers about service features and applications, to establish or redefine a competitive position, and to help make services more tangible (Lovelok et al., 1998).

Within bank marketing, banks are emphasizing advertising in order to carry their message to current and potential customers (Laskey et al., 1992). Effective bank advertising can influence consumers' attitudes toward the bank and bank services, which in turn, affect the intention to purchase (Page and Luding, 2003; Laskey et al., 1992).

2.3.5.2 Personal Selling

Personal selling is the face-to-face interpersonal communication by a representative from the firm to make sales and build customer relationships (Burnett and Moriarty, 1998). Examples include the in-store assistance of a sales clerk (retail selling) or a sales call at home (door-to-door selling) (Burnett and Moriarty, 1998).

Personal selling is considered to be the backbone of communication in services marketing (Kasper, Helsdingen and Vries, 1999). The benefit of personal selling is

that the salesperson is in an excellent position to encourage the customer to act. The one-on-one interaction of personal selling means that a salesperson can effectively respond to and overcome objections (customers' concerns or reservations about the service product) so that the customer is more likely to buy (Burnett and Moriarty, 1998). In addition, the personal touch can provide security, confidence and credibility to customers in services and it has a strong probability of leading to a sale (Kasper et al., 1999).

In a banking context, personal selling has come to the forefront as newer services are becoming more complex than straight-forward checking and saving (Berry and Kantaka, 1990). The customer-banker interactions that personal selling offers answer customers' questions immediately, gives more explanations about the service products, and provides persuasion and reassurance to customers in making purchase decisions (Howcroft, Hewer and Durkin, 2003; Berry and Kantaka, 1990).

2.3.6 Word-of-Mouth Factor

Word-of-Mouth (WOM) refers to informal communication between consumers about products and services (Neal, Quester and Hawkins, 2004). Schiffman and Kanuk (1997) stated that WOM implies face to face communication. WOM can take place in a telephone conversation or within the context of a chat group on the Internet. However, none of the consumers involved in WOM represent a commercial selling

source that would gain directly from the sale (Schiffman and Kanuk, 1997). The main bases for WOM networks are friends, family and colleagues (Bruyn and Lilien, 2008; Arndt, 1967).

WOM carries particular weight not only as a key information source for consumers, but also as a method of influencing the consumer's attitude and behaviour (Kasper et al., 1999). The importance of WOM resides in the fact that consumers' choice and purchase decision are usually effected by WOM, especially when the purchase is in a services context (Lovelok et al., 1998; Bayus 1985; Lutz and Reilly, 1973). Thus, the WOM process offers special solutions to the "problem" of intangibility of services and WOM can help to overcome a service's problem of credibility (Bayus 1985).

Consumers can obtain information vicariously about experience qualities by asking acquaintances about the services. In addition, WOM is perceived to be more reliable and less biased than other communication sources (Lovelok et al., 1998). Positive WOM has been found to decrease customers' perception of risk and increase their intention to buy a service (File and Prince, 1992). Negative WOM can be extremely detrimental to a company's service offerings and is similarly well-established as a significant deterrent to consumer purchase intent. (Lovelock et al., 1998; File and Prince, 1992; Bolfing, 1989).

In a banking context, Owusu-Frimpong (1999) argues that WOM is an effective marketing communication that informs customers about bank services. Likewise, File and Prince (1992) indicate that WOM is an important construct in the information search processes of consumers selecting financial services. The author also suggests that positive WOM is weighed heavily in the buyer behaviour stages leading up to a decision to purchase financial services.

2.3.7 Perceived Risks Factor

2.3.7.1 The Concept of Perceived Risk

Perceived risk refers to "the nature and amount of risk perceived by a consumer in contemplating a particular purchase decision" (Cox and Rich, 1967). The amount of risk involved in any behavioral act is a function of two factors: the amount that would be lost if the consequences of the act are not favorable and the individual's subjective feeling or degree of certainty that the consequences will be unfavorable (Cox, 1967).

According to Bauer (1967), the concept of risk is organized around the idea that consumer behavior involves risk in the sense that any action of a consumer will produce consequences that they cannot anticipate with anything approaching certainty, some of which is likely to be unpleasant. Cox (1967) states that the concept of risk can be best understood when the consumer is viewed as having a set of buying goals

associated with each purchase. To the extent that the consumer realizes that all the buying goals are not attained, risk is perceived (Cox, 1967). Kogan and Wallach (1964) suggest that the concept of perceived risk consists of a chance (or probability) aspect and a danger (or the severity of negative consequences) aspect. Cunningham (1967) conceptualizes perceived risk in terms of two components: uncertainty involved in a purchase, and the consequences of taking an unfavorable action.

Perceived risk is powerful in explaining a consumer's behavior because consumers are more often motivated to avoid mistakes than to maximize utility in purchasing (Mitchell, 1999). Risk is often present in a choice situation as consumers cannot always be certain that a planned purchase will achieve satisfactory goals. The uncertainty may result from factors inherent in the product, the place of purchase and the mode of purchase (Cox and Rich, 1967).

2.3.7.2 Perceived Risks and Service Sector

Consumers perceive greater risks when purchasing services other than goods, because services are intangible, non-standardized, and often sold without guarantees or warranties (Murray and Schlacter, 1990; Zeithaml, 1981). Consumers can rarely return a service to the service provider once the service has been consumed, and in particular, some services are so technical or specialized that consumers possess neither the knowledge nor the experience to evaluate them, even after having

consumed the service (Zeithaml, 1981).

Uncertainties associated with the purchase of services and the possibility of service failure result in a very high degree of risk in the services purchase situation. Some degree of perceived risk probably accompanies all purchase transactions and consequently, perceived risk is an important factor in explaining how consumers purchase services (Guseman, 1981; Zeithami, 1981 cited in Weng, 2005).

2.3.7.3 Types of Perceived Risks

Perceived risk is generally regarded as being a composite of several categories of risk. Six types or components of perceived risk have been identified: financial, performance, psychological, physical, social, and time (Jacoby and Kaplan, 1972; Roselius, 1971).

1. *Financial risk*- the service outcome will cause the consumer monetary loss.
2. *Performance risk*- the service will not perform as well as consumers anticipates.
3. *Psychological risk*- consumers suffer mental stress and a lower self-image.
4. *Physical risk*- a service is harmful to consumers' health and the purchasers will receive physical injury.
5. *Social risk*- social ostracism and fear of being seen in a negative light by others.
6. *Time risk*- consumers will lose too much time because of a bad purchase.

(Source: Laukkanen, Manolis and Laukkanen, 2009; Lee, 2009; Weng, 2005; Lim,

2003)

2.3.7.4 Perceived Risks in Internet Banking

The dimensions of perceived risk may vary according to the service (product) class (Featherman and Pavlou, 2003). Lee (2009) argues that Internet banking does not incur any threat to human life; therefore, physical risk should not be necessarily measured. Littler and Melanthiou (2006) add security risk in the case of Internet banking. Therefore, the following six types of perceived risk in Internet banking have been identified:

1. *Security/privacy risk:* Refers to security/privacy threats whereby a fraud or a hacker may get unauthorized access to the online bank user's account and fraudulently acquire sensitive information, such as usernames, passwords and credit card details. Both fraud and hacker intrusion can lead to potential monetary loss and violate users' privacy (Lee, 2009; Littler and Melanthiou, 2006).

2. *Financial risk:* Represents the possibility of monetary loss due to transaction error or bank account misuse (Lee, 2009). The consumer may perceive that if mistakes are made, reversing a transaction or a refund may not be possible.

3. *Performance risk:* Refers to an unexpected breakdown of system servers or disconnection from the Internet while conducting online transactions and the consumer may not be certain whether the transactions are performed or not (Lee, 2009).

4. *Psychological risk:* Occurs when something goes wrong with Internet banking transactions and consumers are likely to feel frustrated or annoyed, and their self image may be adversely affected by the adoption of Internet banking (Littler and Melanthiou, 2006) .

5. *Social risk:* Refers to the possibility that using Internet banking may result in the disapproval of one's family, friends or work group. Consumers who are not adopting Internet banking may have negative or positive opinions depending on how Internet banking is viewed by other people (Lee, 2009).

6. *Time risk*: Related to the significant length of time involved in learning and using Internet banking (Lee, 2009). Time risk is also related to the time involved in dealing with erroneous transactions or the failure to effect transactions expeditiously (Litter and Melanthiou, 2006).

2.3.8 Price Factor

2.3.8.1 Definitions of Price

Zeithaml (1998) maintains that from a customer's cognitive conception, price is something that must be given up or sacrificed to obtain certain kinds of products or services. An overall perceived price is a combination of monetary price and non-monetary price (Chen, Gupta and Rom, 1994).

In the context of banking, price has additional components. Banks not only charge fees for the services, but also impose interest charges on loans and pay interest on certain types of accounts, thus price has a wider meaning in the banking industry (Gerrard and Cunningham, 2003).

2.3.8.2 The Importance of Price

Rothwell and Gardiner (1984) observe that the price factor is one of the fundamental sets of factors defining user needs. In situations of choice, Engel, Blackwell and Miniard (1995) argue that price is a cue used by consumers to select an alternative and a consumer's choice relies heavily on the price of alternatives. Colgate and Hedge (2001) identify price as having the most impact on customer switching in the banking industry. Howard (1977) gives importance to the price factor in the adoption and diffusion of innovation. Javalgi, Armaco and Hoseini (1989) find that price emerged as one of the most important factors in customers' bank selection.

Rayport and Sviokla (1994) emphasize the pricing aspect in the electronic distribution of goods and services. The Wallis Report (1997) notes that for consumers to use technologies, the price to use them has to be reasonable compared to alternatives. Sathye (1999) argues that, in the context of Internet banking, two kinds of price are involved: the normal cost associated with internet activities, and the bank cost and charges.

2.3.9 Demographic Characteristics

Demographic variables have been used as a basis for understanding consumer characteristics for a considerable time (Lewis, 1981; Block and Roering, 1976). In this sense, demographics are used as a proxy for the way consumers will behave (Blackwell, D'Souza, Taghian, Miniard and Engel, 2006). Kotler (1982) classifies demographic characteristics as age, sex, income, occupation, education, race, religion, nationality, family size, and family life cycle.

The popularity of using demographic factors is attributable to the observed relationship between the consumption of certain products and certain demographic factors (Block and Roering, 1976). Demographic information can be also used to guide new product development, product repositioning, brand extension, distribution strategies or media and creative appeals in communications programs (Blackwell et al., 2006). In addition, demographic trends can be used to predict changes in demand for, and consumption of, specific products and services by monitoring the population groups which will be growing in the future (Blackwell et al., 2006).

Chapter 3 Model and Hypotheses

3.1 Introduction

This chapter discusses the conceptual gaps identified in the literature review presented in Chapter Two. A conceptual model of the Internet banking choice factors is presented and the eighteen hypotheses that are proposed for this study are discussed. The hypotheses address the following three research objectives:

(3) To identify the factors that affect bank customers' adoption of Internet banking in New Zealand.

(4) To determine the most important factors that affect bank customers' adoption of Internet banking in New Zealand.

(4) To examine the impacts of demographic characteristics on bank customers' adoption of Internet banking in New Zealand.

3.2 Conceptual Gaps

The literature review has identified three research gaps in customers' adoption of Internet banking in the New Zealand banking industry. These are:

(1) Limited published research on the factors influencing customers' adoption of Internet banking in the New Zealand banking industry.

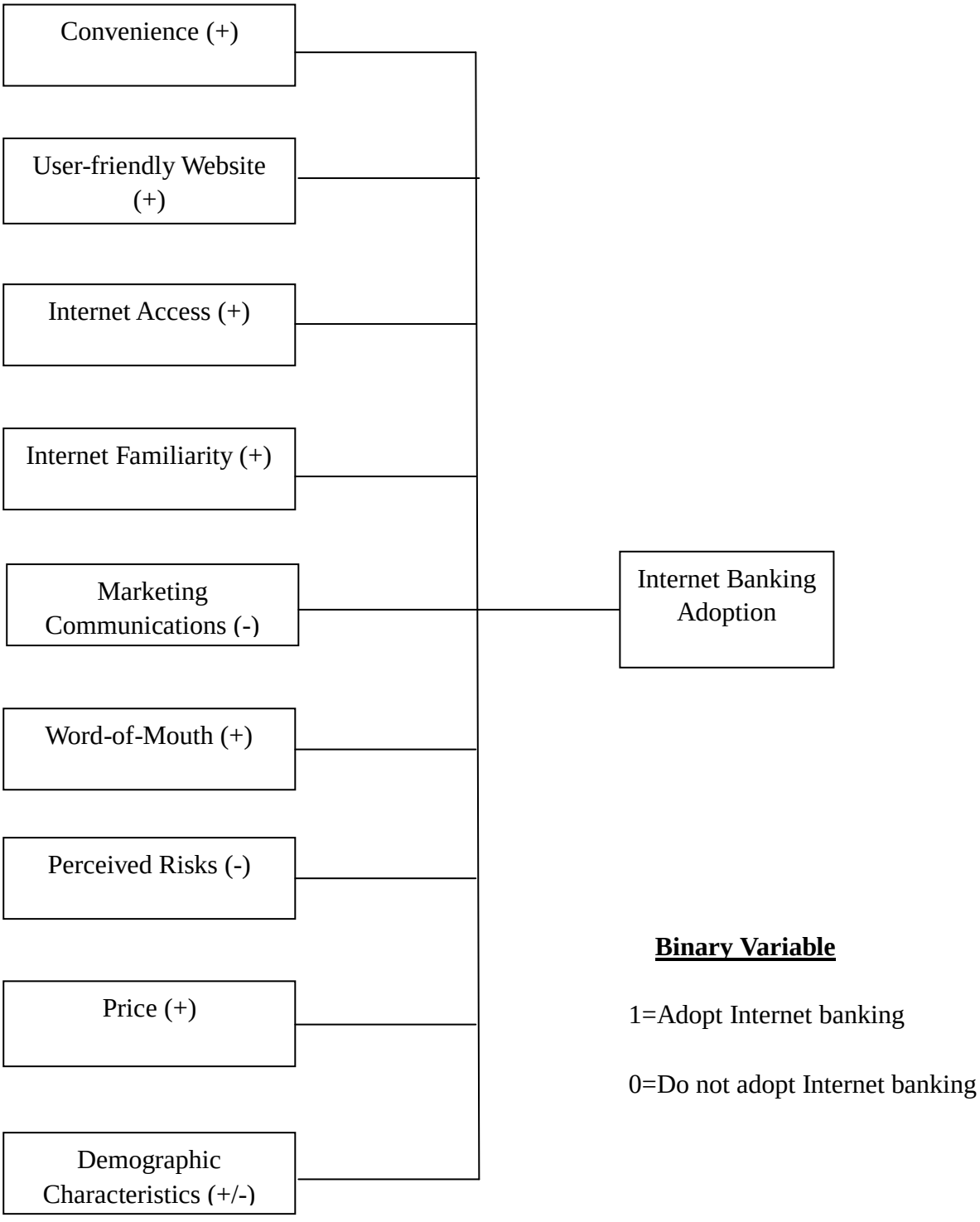
(2) Limited published research in academic marketing journals focusing on customers' adoption of Internet banking in the New Zealand banking industry.

(3) Limited empirical research on customers' adoption of Internet banking in the New Zealand banking industry.

3.3 The Conceptual Research Model

The conceptual research model (see Figure 3.1) developed in this study was based on the review of the literature in Chapter Two and the focus group discussions (see Section 4.5.1). The research model suggests that consumers make a decision on the adoption of Internet banking based on nine factors: Convenience, User-friendly Website, Internet Access, Internet Familiarity, Marketing Communications, Word-of-Mouth, Perceived Risks, Price and Demographic Characteristics (gender, age, marital status, qualification, occupation and household income).

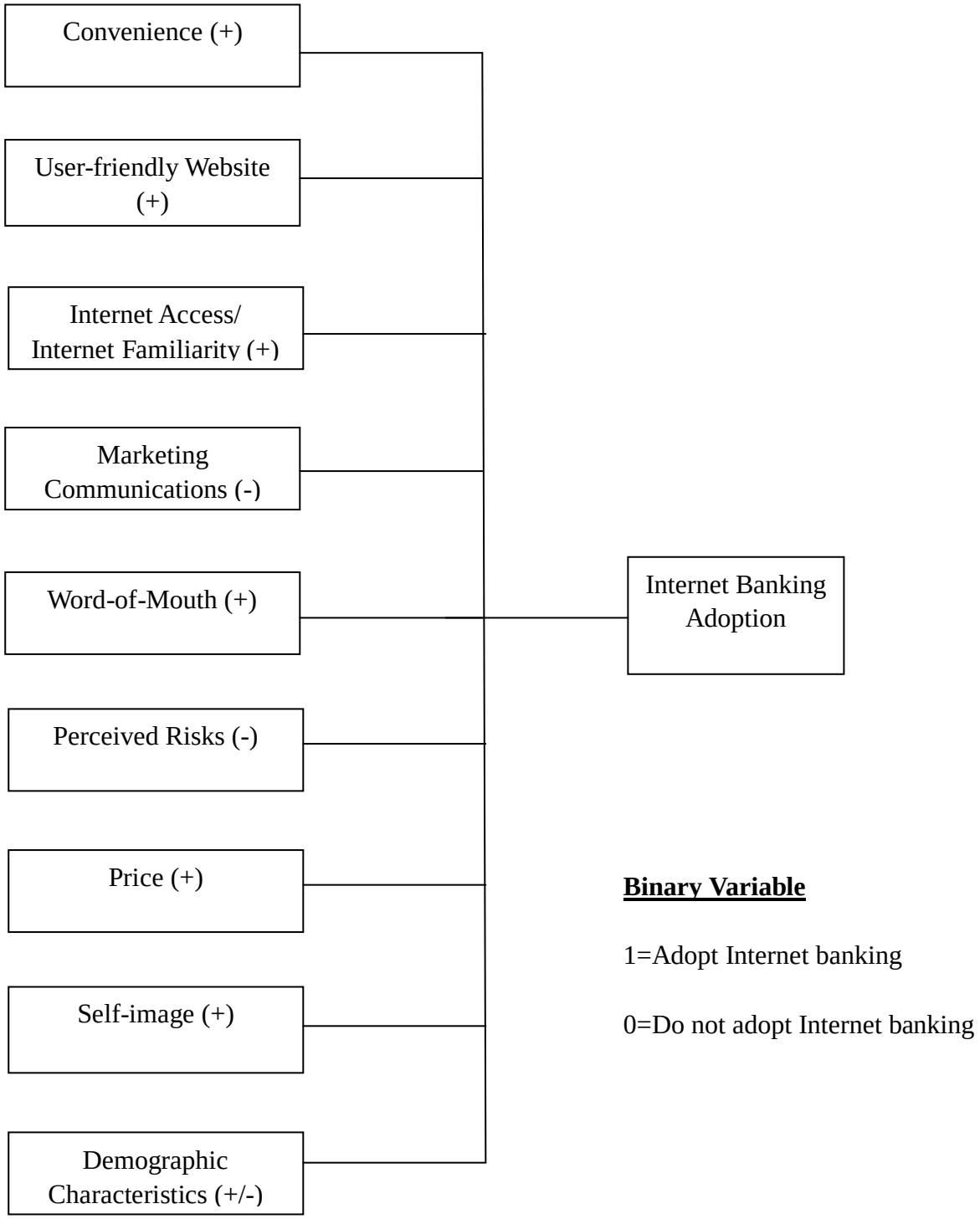
Figure 3.1: The Conceptual Research Model



3.4 Research Model Based on the Factor Analysis

Due to the exploratory nature of this study, an exploratory factor analysis was performed (see Section 5.4.1) to obtain a reliable factor structure. After conducting factor analysis, Internet Access and Internet Familiarity combined into one factor, and an additional factor named Self-Image was derived. Therefore, the nine decision factors in this study were derived from the literature review, focus group discussions, factor analysis and logistic regression. Moreover, the nine factors were identified to improve the research model and develop the hypotheses used in this study. The Nine factors are: Convenience, User-friendly Website, Internet Access/Internet Familiarity, Marketing Communications, Word-of-Mouth, Perceived Risks, Price, and Self-image. Furthermore, the demographic characteristics: gender, age, marital status, qualification, occupation and household income, are retained in the model. The final version of the research model is presented in Figure 3.2.

Figure 3.2: Internet Banking Decision Factors Model



Independent Variables

3.5 Hypothesis Development

The hypotheses developed for this study were based on the factor structure derived from the exploratory factor analysis. Eighteen hypotheses are established to satisfy the three research objectives. Hypotheses 1 to 8 address Research Objective One and Two; and Hypotheses 9 to 18 address Research Objective Three.

3.6 Hypotheses Relating to Objective One and Two

3.6.1 Convenience Factor

A number of studies report that one of the main factors driving people to use Internet banking is convenience (Padachi et al., 2007; Gerrard and Cunningham, 2003; Bughin, 2001; Polatoglu and Ekin, 2001; Thornton and White, 2001; Mols et al., 1999). Lichtenstein and Williamson (2006) conclude that in the Australian banking context, the convenience perception factor in terms of time saved and 24/7 access, has the most impact on making the decision to bank online. In addition, Sohail and Shanmugham (2003) report that time savings and the ease of carrying out bank transactions are the most important aspects of convenience, which in turn, affect the adoption of Internet banking services.

Liao and Cheung (2002) empirically identify convenience as a significant quality attribute in the perceived usefulness of Internet banking, which positively influences

consumers' willingness to use Internet-based e-banking. Lee et al. (2005) find that consumers perceive convenience to be an important determinant of intention to adopt the Internet banking services. Likewise, Podder's (2005) investigations find that perceived convenience has a positive effect on a consumer's behavioral intention to adopt Internet banking. Yu and Lo (2007) discover that perceived convenience significantly influences consumers' actual behavior to bank online.

Thus, the following hypothesis is proposed:

H1: There is a positive relationship between perceived convenience and Internet banking adoption.

3.6.2 User-friendly Website Factor

Usability is one of the main factors considered in the Technology Acceptance Model (TAM), which analyses users' attitudes and the adoption of new technology (Hu, Chau, Sheng and Tam, 1999; Straub, Limayem and Karahanna-Evaristo, 1995; Davis, 1989). Shih (2004) applies TAM to predict user acceptance of e-shopping and claims that website usability determines consumers' attitudes toward e-shopping.

Lichtenstein and Williamson (2006) consider that user-friendliness or usability is closely linked to consumers' perceptions of complexity and website design issues. The authors argue that the complexity of a bank website prevents consumer from pursuing Internet banking. Moreover, Lee (2009) indicates that slowness to download and

difficulty in navigation can negatively influence consumers' attitudes to banking online.

A user-friendly website has features of a quick response time, easy navigation, rich information content, and responsive interaction with customers (see Chapter Two). Richness of information and a responsive interaction provision on banking websites can facilitate consumers' acquisition of the details of financial services at the bank, which also provide support for customer when choosing Internet banking services. (Lichtenstein and Williamson, 2006; Waite and Harrison, 2004). In addition, Shih (2004) states that variety in the information content and the quick responses from a bank website positively influence consumer attitudes towards the use of Internet banking. Sohail and Shanmugham (2003) show that easy navigation in a bank's website is one of the major variables affecting the adoption of Internet banking.

User-friendliness is related to 'ease of use' (Liao and Cheung, 2002). Padachi et al. (2007) empirically investigate whether a user-friendly bank site is an important determinant of ease of use, which affects the adoption of Internet banking services. Akinci et al. (2004) demonstrate that a user-friendly website is regarded as one of the important criteria to influences consumers' selection and adoption of Internet banking services. Jaruwachirathankul and Fink (2005) conclude it is essential for banks to provide a well-designed and user-friendly website to attract potential adopters'

attention.

Hence, the following hypothesis is proposed:

H2: There is a positive relationship between a user-friendly website and Internet banking adoption.

3.6.3 Internet Access/Internet Familiarity Factor

One factor that determines the level of demand for internet banking services is the number of people having access to the Internet (Sohail and Shanmugham, 2003). In New Zealand, the number of internet users was 725,000 in 2001 and doubled to 1,500,000 in 2008. During the same period, the number of Internet banking users doubled as well from 480,000 to 1,020,000 (Neilsen, 2008; Statistics New Zealand, 2008; Taylor, 2002).

Lichtenstein and Williamson (2006) suggest that missing or inadequate internet accessibility is a key factor which influences a consumer's decision to use an Internet banking service. The authors find that people with a home internet connection with limited access hours (for cost-based reasons) use their access time for other purposes rather than utilizing Internet banking. O'Connell (1996) identifies that a lack of access to the Internet is a possible reason for the slow adoption of Internet banking. Moreover, Karjaluoto et al. (2002) find that a reason that non-users do not adopt Internet banking is that they do not have access to the Internet.

Centeno (2004) indicates that Internet banking is only one of many applications used by Internet users and there is insufficient incentive for consumers to acquire the necessary computer and Internet infrastructure just to use this application. Consequently, it seems that having a pre-existing Internet access, either at home, at work, at university, or at a Public Internet Access Point is crucial for Internet banking adoption. In addition, Sathye (1999) empirically investigates the availability of access to the Internet as a prerequisite for the adoption of Internet banking. Furthermore, Sohail and Shanmugham (2003) identify Internet access as one of the major factors affecting the adoption of Internet banking services and discover that the more widespread the access to the Internet, the greater the possibility of the use of Internet banking (Sathye, 1999).

Since Internet banking services are delivered through the medium of the Internet, consumers need to be familiar with computers in general and should be, to some extent, proficient in the use of web browsers (Lee et al., 2005). Lassar et al. (2005) note that Internet experience is important in understanding how belief in one's capability to organize and execute Internet banking affects the use of the technology. As O'Cass and Fenech (2003) illustrate that accumulated sufficient Internet experience creates a belief in Internet users' ability to use the Internet for commercial purposes. Polasik and Wisniewski (2009) determine that Internet familiarity/experience is an important factor that influences customers to adopt

Internet banking.

Four variables are suggested to construct the consumers' Internet familiarity. The first variable is level of Internet skills and Internet comfort (Lassar et al., 2005; Lee et al., 2005; Black et al., 2001). Proficient users of Internet consider accessing Internet banking services to be less complex and show a great proclivity to use them (Polasik and Wisniewsk, 2009; Black et al., 2001). The second important variable is online purchase experience (Park and Stoel, 2005; Lee and Lee, 2001). Dickerson and Gentry (1983) state that consumers' adoption of technology-based products is largely influenced by their prior experience with similar technologies. Lee et al. (2005) determine that consumers who have used the service medium of the Internet in the past, such as online shopping, perceive online banking as compatible. Lee and Lee (2001) find that consumers with experience purchasing through the Internet feel comfortable about online financial transactions, and therefore are more likely to adopt Internet banking. The third variable is the length of Internet use, which was utilized previously in Polasik and Wisniewsk's (2009) study. The authors determine that individuals who have used Internet for a longer period will be more familiar with the Internet environment, and are likely to open an online banking account. Furthermore, Lassar et al. (2005) suggest that the intensity of web usage is an important indicator of experience, which positively affects Internet banking adoption.

Therefore, the following hypothesis is proposed:

H3: There is a positive relationship between the availability of Internet access/Internet Familiarity and Internet banking adoption.

3.6.4 Marketing Communications Factor

The adoption or rejection of an innovation begins when "the consumer becomes aware of the product/service" (Rogers and Shoemaker, 1971). Sathye (1999) identifies lack of awareness as one of the main factors affecting consumers' adoption of Internet banking in Australia. Marketing communications create an opportunity to eliminate any existing information barriers and stimulate consumers' exposure to the benefits of Internet banking (Polasik and Wisniewski, 2009; Neal et al., 2004).

As discussed in the previous literature review (Section 2.5), the most widely applied forms of marketing communications in the context of banking are advertising and personal selling (Laskey et al., 1992; Berry and Dantak, 1990). Polatoglu and Ekin (2001) note that marketing efforts such as advertising influences Internet banking acceptance in Turkey. Laukkanen et al. (2009) emphasize the importance of face-to-face contact and find that interpersonal face-to-face communication provided by banks can inform consumers of the option of banking having the Internet. Prasad and Arumbaka (2009) show that most customers in India do not know how to become an Internet banking user, or how to use the technology due to lack of marketing efforts on the part of banks. Lichtenstein and Williamson (2006) note that ineffective

marketing communication, such as ineffective advertising, television or radio has eluded the attention of many banking consumers who may be prospective adopters of Internet banking.

Therefore, the following hypothesis is proposed:

H4: There is a negative relationship between ineffective marketing communications and Internet banking adoption.

3.6.5 Word-of-Mouth Factor

Word-of-Mouth (WOM) is particularly important in service marketing due to the heterogeneity of service quality, the higher associated risk, and the intangible nature of services (Bansal and Voyer, 2000; Ekelund, Mixon and Ressler, 1995; Jolson and Bushman, 1978). Consumers have been found to rely on WOM to reduce the level of perceived risk and the uncertainty that is often associated with the service purchase decision (Murray, 1991). Researchers have demonstrated that WOM plays an important role in the information diffusion in consumer markets and shaping consumers' attitudes. In addition, researchers identified that personal conversations and the exchange of information among acquaintances not only affects consumer expectations (Anderson and Salisbury, 2003; Zeithanml and Bitner, 1996; Herr, Kardes and Kim, 1991), but also influence consumers' choices and purchase decisions (Arndt, 1967; Whyte and William, 1954).

Kim and Prabhaker (2000) suggest that WOM referral is a key antecedent of initial trust in electronic channel, which has effect on the adoption of Internet banking. In addition, Yu and Lo (2007) find that the adoption of Internet banking is significantly influenced by friends, family, colleagues, and/or peers.

Hence, the following hypothesis is proposed:

H5: There is a positive relationship between positive Word-of-Mouth and Internet banking adoption.

3.6.6 Perceived Risks Factor

The role of perceived risk has been investigated widely in the business area in understanding a consumer's intended and actual purchase behavior (Im, Kim and Han, 2008; Kim, Ferrin and Rao, 2008; Lopez-Nicolas and Molina-Castillo, 2008; Forsythe and Shi, 2003). In an e-service context, perceived risk regarding the uncertainty of the value of services, the technological unpredictability of the Internet, and the impersonal nature of online transactions, reduces the consumer's perception of control over the purchasing process (Featherman and Pavlou, 2003; Pavlou, 2003).

Cooper (1997) identifies risk as an important characteristic of a consumer's perception in the adoption of innovation. In some empirical studies, perceived risk is identified as having a significant negative and direct effect on consumers' adoption of Internet banking (Lee, 2009; Kuisma, Laukkanen and Hiltunen, 2007; Polatoglu and

Ekin; 2001; Tan and Teo, 2000). In addition, the security/privacy risk, as one of main dimensions of perceived risk, appears to the most inhibiting factor in the adoption of Internet banking (Lee, 2009; Rotchanakitumnuai and Speece, 2003).

Therefore, the following hypothesis is proposed:

H6: There is a negative relationship between higher perceived risks and Internet banking adoption.

3.6.7 Price Factor

Liao and Cheung (2002) conduct an empirical study on consumer attitudes toward Internet-based e-banking and indicate that price and cost imply a constraint on actual purchases, which must be taken into account in the expectations and perceptions of the usefulness of Internet e-retail banking.

As transactions on the Internet are either considerably lower priced or without any fee at all, price incentives have been successfully used by banks to motivate consumers to use Internet banking (Kerem, 2003). Polatoglu and Ekin (2001) identify that Internet banking users are significantly satisfied with cost savings through banking on the Internet. On the other hand, Sathye (1999) argues that the unreasonable cost of Internet banking activities and bank charges has a negative effect on Internet banking adoption. Wallis Report (1997) states that for consumers to use new technologies, the technologies must be reasonably priced relative to the alternative. According to

Athanassopuolos and Labroukos (1999) and Karjaluoto, Mattlia and Pento (1999), price is deemed to be an important criterion for the adoption of Internet banking. Hence, the following hypothesis is proposed:

H7: There is a positive relationship between low price and Internet banking adoption.

3.6.8 Self-Image Factor

Self-image is the subconscious view on how a person sees themselves in life (The American Salesman, 1996). Sharp (2002) notes that self-image represents your own beliefs about your strengths and weaknesses, your own understanding of possibilities and limitations. Our reactions to life and other people, the way we think, act, respond and even our abilities, often are determined by subconscious self-image (Sportelli, 2008). People with a good self-image are more willing to take risks and even see those risks as a means to getting to the next step. On the other hand, people who have a poor self-image often go through life without using their talent and they also may live in a restrictive, very cautionary way and take very small and deliberate steps (The American Salesman, 1996). Sportelli (2008) argues that each of us builds a self-image by past experiences, successes, failures, accomplishments and disappointments.

In a service context, the attitude or purchase intention towards a service is highly dependent on the extent to which these services display similarities to the consumer's self-image (Graeff, 1996). Kleijnen, Ruyter and Andreassen (2005) find that

self-image has a significant impact on consumer attitudes and the adoption decision regarding service innovations (mobile services). Globerson and Maggard (1991) identify that self-image is one of the major factors that affect consumers' preferences for using the self-service technology. M äenp ää et al. (2008) conclude that self-image is different between low-familiar Internet banking users and highly familiar Internet banking users. Littler and Melanthiou (2006) argue that a lower self-image is a potential source of psychological risk which affects consumer behaviour towards Internet banking services.Therefore, the following hypothesis is proposed:

H8: There is a positive relationship between a high self-image and Internet banking adoption.

3.7 Hypotheses Relating to Research Objective Three

3.7.1 Demographic Characteristics

Consumers' demographic characteristics have been widely used to distinguish the differences between segments of customers (Kotler, 1982). In terms of assessing Internet banking, demographic characteristics, such as age, gender, occupation, annual income, educational qualifications, and marital status may have an effect on the consumer's use of Internet banking (Gan, Clemes, Limsombunchai and Weng, 2006).

Gao and Owolabi (2008) find that female respondents are more likely to adopt

Internet banking than males in Nigeria. Deutshce Bank Research (2010) concludes that women are more like to use online banking than men in Latvia.

Therefore, the following hypothesis is formulated:

H9: There is a positive relationship between females and consumers' adoption of Internet banking.

Polisak and Wisniewski (2009) find that the younger individuals tend to have higher adoption rates of Internet banking. Kim et al. (2005) demonstrates that consumers who are younger are more likely to adopt Internet banking. Bauer and Hein (2006) identify that older consumers are less likely to adopt Internet banking. In addition, according to Flavián et al. (2006), younger people are most likely to carry out transactions via the Internet and alternatively, older people are less likely to use online banking. Therefore, the following relationships are hypothesized:

H10: There is a positive relationship between younger age and consumers' adoption of Internet banking.

H11: There is a negative relationship between older age and consumers' adoption of Internet banking.

Mattila, Kajaluoto and Pento (2003) identify that married consumers are more likely to use Internet banking than unmarried or widowed ones. Wan et al. (2005) find that the adoption of Internet banking is higher in the higher-level occupations, such as

managerial and professional, than lower-level occupations, such as labouring. Stavins (2001) identifies white-collar and married consumers are more likely to adopt Internet banking. Therefore, the following hypotheses are proposed:

H12: There is a positive relationship between marital status and consumers' adoption of Internet banking.

H13: There is a positive relationship between higher-level occupations and consumers' adoption of Internet banking.

Wan et al. (2005) suggest that educational level is associated with the adoption of Internet banking. Polatoglu and Ekin (2001) points out that highly educated consumers are more likely to accept Internet banking. Yiu et al. (2007) find that consumers with a Bachelor's degree or above have a much higher Internet banking adoption rate than those people less qualified. Polasik and Wisniewski (2009) find that lack of formal education hinder Internet banking adoption. In addition, Gerrard et al. (2006) identify that less-educated people are less likely to use Internet banking. Therefore, the following relationships are hypothesized:

H14: There is a positive relationship between a higher educational level and consumers' adoption of Internet banking.

H15: There is a negative relationship between a lower educational level and consumers' adoption of Internet banking.

In terms of consumers' income level in Internet banking, Lassar et al. (2005) establish

that income is the only demographic variable to significantly affect the adoption of Internet banking. Wan et al. (2005) find that income positively influences the adoption of Internet banking. Padachi et al. (2007) find that higher income people are more likely to use online banking. Flaviá n et al. (2006) conclude that lower income people are less likely to conduct banking operations on Internet.

Therefore, the following hypotheses are proposed:

H16: There is a positive relationship between higher incomes and consumers' adoption of Internet banking.

H17: There is a negative relationship between lower incomes and consumers' adoption of Internet banking.

H18: There are some different perceptions of the Internet banking adoption factors within demographic groups.

3.8 Chapter Summary

This chapter identified three research gaps in the literature pertaining to customers' adoption of Internet banking. The conceptual research model and a research model based on the factor analysis were presented, along with eighteen testable hypotheses.

Chapter 4 Research Methodology

4.1 Introduction

This chapter outlines the research plan and methods used to test the fourteen hypothesizes developed in Section 3.3, and to answer the three objectives stated in Section 3.1. The research plan includes research design, discussion of the sampling method, sample size, data collection method, and questionnaire development. Finally, the data analysis techniques (factor analysis and logistic regression analysis) used in this study are discussed.

4.2 Research Design

Bank customers in Christchurch were chosen as the sample to examine the factors affecting their decision between Internet banking. Focus group interviews were used to develop a suitable survey questionnaire. Due to the geographic dispersion of the sample, the large target sample size required, and time and monetary constraints, a mail survey was used to collect data. A pre-test of the questionnaire was conducted before the questionnaire was mailed to the sample respondents.

4.3 Sampling method

The data was collected using a mail survey of Christchurch residents. The data was collected from respondents 18 years and older. A systematic random sampling method

was applied in this research. The systematic random sampling procedure represents a true probability method, as every sampling unit has an equal chance of being chosen for the sample (Sekaran, 2003). In addition, systematic random sampling is often recommended for consumer attitude surveys and consumer behaviour surveys (Sekaran, 2003; Cavana, Delahaye and Sekaran, 2001) as the method is suitable when the population frame is large (Sekaran, 2003). The sample used in this survey was drawn from the 2009/2010 Christchurch Telecom White Pages.

4.4 Sample Size

Sample size is considered an important factor in order to make generalizations with confidence about the constructs under investigation. Therefore, the sample size should provide reliable estimates and reflect the population parameters as closely as possible with a narrow margin of error (Sekaran, 2003). This research targeted bank customers in Christchurch. According to the 2006 New Zealand census, the population of Christchurch was 348,435. Based on Mendenhall, Reinmuth and Beaver (1993) formula, the sample size required to achieve a 95% level of confidence was estimated at 384[1]. The expected response rate is 25 percent, thus 1500 survey questionnaires were mailed out.

[1] Sample Size Formula: finite population without replacement: $n = \frac{NZ_{\alpha/2}^2 pq}{(N-1)e^2 + Z_{\alpha/2}^2 pq}$

4.5 Questionnaire development

The lack of published research relating to Internet banking adoption factors in New Zealand make it is necessary to collect primary data to test the 14 hypotheses and to answer the research objectives of this study. As this research is exploratory, a thorough review of the literature and focus group discussions were used to help identify the factors that consumers consider important when deciding to adopt Internet banking services. Initially, the factors derived from the literature review and feedback from the focus groups were used to assist in developing the questionnaire.

4.5.1 Focus Group Interviews

The literature review presented in Chapter Two identified the potential primary factors influencing customers' choice of Internet banking in the New Zealand banking industry. However, in order to develop additional insights into the factors affecting customer's adoption of Internet banking and to help develop a suitable survey questionnaire, it was necessary to conduct focus group interviews.

Focus group research has been used to "review consumers' hidden needs, wants, attitudes, feelings, behaviours, perceptions, and motives regarding services, products, or practices" (Hair, Bush and Ortinau, 2003, p.223). In addition, Greenhaum (1998) suggests that the focus group interview is the most popular method for attitude research. Integrating focus group interviews with quantitative methods such as

questionnaire surveys is critical for developing and creating reliable measurement scales (Hair et al., 2010). Morgan (1998) states that focus group interviews enable researchers to not only facilitate questionnaire design, but also to help researchers to refine wordings on particular questions.

Greenhaum (1998) recommends using four to six participants in conducting a focus group interview. Two focus groups (each consisting of six participants) were conducted for this study. Participants were asked to explain the factors that influenced them to adopt Internet banking. Participates were also asked to identify the factors that they considered to be the most influential in their decision to adopt Internet banking. In addition, participants were encouraged to list any additional factors that influenced their decision to bank online. Focus group members also suggested some additional factors to include in the analysis.

The information gathered from the focus group interviews were recorded and transcribed, and along with the findings from the literature review were used to help develop the survey questionnaire.

4.5.2 Questionnaire Format

The questionnaire consists of four sections. Section One is designed to identify which group the customer belongs to: Internet banking user, or non-Internet banking user.

Section Two addresses questions relating to the factors that may influence bank customers' decisions to adopt Internet banking. Section Three addresses questions relating to the factors that may influence consumers' decisions to not adopt Internet banking. The last section captures customers' demographic information, such as gender, age, marital status, qualification, occupation, and income (see Appendix B, page 181).

In order to improve the reliability of the constructs, a multiple-item measurement scale was used (Churchill, 1979). A seven-point Likert scale is the optimum size compared to five and ten point scales (Schall, 2003). Therefore, a seven-point weighted Likert scale was used to measure all the items in Section Two and Section Three of the questionnaire, where 1="Strongly Disagree" to 7="Strongly Agree".

4.5.3 Pre-testing Procedures

A pre-test is necessary to assess the reliability and validity of a questionnaire. In the pre-test procedure, a random sample of 30 bank customers aged 18 years and over was drawn to clarify the questions and statements in the questionnaire. The respondents were asked to make comments on any ambiguous or unclear questions. Some minor wording modifications to the survey questionnaire were made as a result of this process. The final version of the questionnaire is in Appendix 2.

4.6 Data Collect Procedures

In this research, a survey questionnaire was used to collect the data. The data collection procedures followed the guidelines set out by Dillman (2007). The survey includes a cover letter, a copy of the questionnaire and a prepaid reply envelope. Based on a random sample chose from the New Zealand White Pages-Christchurch (2009), 1500 questionnaires were sent to potential respondents.

4.7 Data Analysis Techniques

For Objective One, exploratory factor analysis was used to determine the factors that contributed to Internet banking adoption. Subsequently, a logit regression analysis was used to identify the factors that influence customers to adopt Internet banking. Sensitivity analysis was used to answer Research Objective Two. Marginal effect analysis ranks the factors that cause consumers to adopt Internet banking from the most important to the least important. T-tests and one-way ANOVA were applied to answer Research Objective Three.

4.7.1 Factor Analysis

Factor analysis is a multivariate statistical method whose primary purpose is to define the underlying structure among the variables in the analysis (Hair, Black, Babin and Anderson, 2010). Factor analysis is an interdependence technique in which all variables are simultaneously considered (Hair et al., 2010). “The general purpose of

factor analysis is to find a way to summarize the information contained in a number of original variables into a smaller set of new, composite dimensions or factors with a minimum loss of information-that is, to search for and define the fundamental constructs or dimensions assumed to underlie the original variables" (Hair et al., 2010, p. 96). Stewart (1981) summarises three functions of factor analysis: (1) minimizing the number of variables while the amount of information in the analysis is maximized; (2) searching qualitative and quantitative data distinctions when the data is too large; and (3) testing hypotheses about the number of distinctions or factors underlying a set of data. Factor analysis as used in this research to answer two objectives: one is to identify underlying structure in the data and two is to reduce number of variables into a more manageable set (Hair et al., 2010).

The following sections explain the different types of factor analysis, the assumptions of factor analysis, and the appropriateness of factoring a correlation matrix, a factor rotation, and interpretation of resulting factors.

4.7.1.1 Modes of Factor Analysis

There are several modes of factor analysis (see Table 4.1), and all of the modes of factor analysis provide information about the dimensional structure of data (Stewart, 1981). According to Hair et al. (2010), the selection of the appropriate mode of factor analysis depends on the research objective. In this study, the objective is to identify

the structure of the relationships among a set of variables from a number of individuals. Therefore, R-mode factor analysis is used in this study to identify the dimensions that are latent (Hair et al., 2010).

Table 4.1: Modes of Factor Analysis (Stewart, 1981, p.53).

Technique	Factor are loaded by	Indices of association are computed across	Data are collected on
R	Variables	Persons	One Occasion
Q	Persons	Variables	One Occasion
S	Persons	Occasions	One Variables
T	Occasions	Persons	One Variables
P	Variables	Occasions	One Person
O	Occasions	Variables	One Person

4.7.1.2 Types of Factor Analysis

There are two general types of factor analysis: exploratory factor analysis and confirmatory factor analysis (Stewart, 1981). *Exploratory factor analysis (EFA)* seeks to uncover the underlying structure of a relatively large set of variables (Garson, 2011). With EFA, all measured variables are related to every factor by a factor loading estimate (Thompson, 2004). EFA allows the multivariate technique to estimate relationships (Hair et al., 2010). The distinctive feature of EFA is that the factors are derived from statistical results, not from the theory, and so they can only be named after the factor analysis is performed (Hair et al., 2010). *Confirmatory factor analysis (CFA)* is a way of testing how well variables measured represents a smaller number of constructs (Hair et al., 2010). With CFA, the researcher must specify both the number

of factors that exist within a set of variables and which factor each variable will load highly on before the results can be computed (Hair et al., 2010). CFA seeks to test hypothesis about the structure of a data set that has been formed by prior research (Stewart, 1981). Hence, EFA was used in this study as the decision factors that impact on Internet banking adoption have not been determined in a New Zealand context.

EFA has two widely used models to obtain factor solutions: common factor analysis and component factor analysis (Hair et al., 2010). The selection of an appropriate model is based on two criteria: (1) the objectives of the factor analysis and (2) the amount of prior knowledge about the variance in the variables (Hair et al., 2010).

Common factor analysis is used primarily to recover the underlying factors in the original variables. In contrast, component factor analysis is used when the objective is summarizing information (variance) in a large set of variables into a minimum number of factors (Aaker, Kumar, Day and Lawley, 2005). Hair et al. (2010) note that component factor analysis is appropriate when prior knowledge suggests that specific and error variance presents a relatively small proportion of the total variance. Thus, component factor analysis is appropriate method for this study.

4.7.1.3 Assumptions for Factor Analysis

Hair et al. (2010) identified several critical conceptual and statistical assumptions for factor analysis. These assumptions are:

No Selection Bias/Proper Specification. Factor analysis is a method of exploring data whose structure is unknown. The method has no means of determining the appropriateness of data other than the correlation among variables (Hair et al., 2010). Garson (2011) indicates that the exclusion of relevant variables and the inclusion of irrelevant variables in the correlation matrix being factored will substantially affect the factors that are uncovered. Therefore, researchers must ensure that the observed patterns are conceptually valid and appropriate for the study when using factor analysis (Hair et al., 2010).

Linearity. Factor analysis is a linear procedure. If non-linearity is present, the solution may be problematic (Coakes, Steed and Price, 2008). The smaller the sample size, the more important it is to screen the data for linearity (Garson, 2011). Therefore, it is necessary to identify any departures from linearity that may affect the correlations (Hair et al., 2010).

Normality. This assumption measures whether the differences are normally distributed between the obtained and predicted dependent variable scores (Stewart,

1981). Any significantly large variation from the normal distribution will cause invalid tests (Hair et al., 2010).

Homoscedasticity. Factor analysis assumes homoscedasticity that diminishes the observed correlations (Hair et al., 2010).

However, if the data matrix has sufficient correlations to justify the application of factor analysis, the statistical assumptions of linearity, normality, and homosedasticity do not have to be met (Hair et al., 2010). The methods to justify sufficient correlations for factor analysis are discussed in the following section.

4.7.1.4 Test for Determining Appropriateness of Factor Analysis

Hair et al. (2010) suggested that there are several methods to determine whether the correlations in the data matrix are sufficient for factor analysis. The following methods were applied to the data in this study to ensure the data was appropriate for exploratory factor analysis.

(i) Examination of the Correlation Matrix.

Examination of the correlation matrix is one of the simplest procedures of determining the appropriateness of factor analysis. As factor analysis is concerned with the homogeneity of items, a pattern of low correlations indicates a heterogeneous set of items which may suggest the factoring is

inappropriate (Stewart, 1981). Factor analysis is appropriate if visual inspection of the correlation matrix reveals a substantial number of correlations greater than 0.30 (Hair et al., 2010).

(i) Inspection of the Anti-Image Correlation Matrix

The anti-image correlation matrix represents the negative value of the partial correlations (Hair, et al., 2010). If the anti-image matrix does have many nonzero off-diagonal entries, the correlation matrix is not appropriate for factoring. The inverse of the correlation matrix should be near diagonal if the matrix is appropriate for factoring (Stewart, 1981).

(ii) Bartlett's Test of Sphericity

Bartlett's test of Sphericity provides the statistical probability that the correlation matrix has significant correlations among the variables (Hair et al., 2010). The hypothesis tested is that the correlation matrix came from a population of variables that are independent. Rejection of the hypothesis is an indication that the data are appropriate for factor analysis (Stewart, 1981).

(iii) Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA)

MSA is used to measure the extent to which variables belong together (Stewart, 1981). The index ranges from 0 to 1, equal1 when each variable is perfectly

predicted without error by the other variables (Hair et al., 2010). Kaiser and Rice (1974) give the different levels of MAS: 0.90+ (marvelours), 0.80+ (meritorious), 0.70+ (middling), 0.60+ (mediocre), 0.50+ (miserable), and below 0.50 (unacceptable).

4.7.1.5 Factor Extraction in Principal Components Analysis

For a large set of variables, factor extraction starts by extracting the combinations of variables that explain the greatest amount of variance (Hair, et al., 2010). There are two commonly used criteria to determine the number of factors to extract, which are: (1) latent root criterion, and (2) scree plot (Stewart, 1981).

Latent Root Criterion

The latent root criterion is the most commonly used technique (Aaker et al., 2005). The rationale for the latent root criterion is that any individual factor should account for the variance of at least a single variable if it is to be retained for interpretation. With factor analysis each factor contributes a value of 1 to the total eigenvalue (Stewart, 1981). Thus, only the factors having latent roots or eigenvalues greater than 1 are considered significant; all factors with latent roots less than 1 are considered insignificant and are disregarded (Stewart, 1981). This technique is most reliable if the number of variables in the factor analysis is between 20 and 50 (Hair et al., 2010).

Scree Test Criterion

The scree test is derived by plotting the latent roots against the number of factors in their order of extraction, and the shape of the resulting curve is used to evaluate the cutoff point (Hari et al., 2010). Stewart (1981, p. 58) explains the procedure:

> "A straight edge is laid across the bottom portion of the roots to see where they form an approximately straight line. The point where the factors curve above the straight line gives the number of factors, the last factor being the one whose eigenvalue immediately precedes the straight line."

4.7.1.6 Factor Rotation

Factor loadings are the correlation coefficients between the variables and factors. Factor loadings are normally used to interpret the role each variable plays in defining each factor (Aaker et al., 2005). Loadings indicate the degree of correspondence between the variables and the factors (Hair et al., 2010). Factor rotation simplifies the factor structure and maximizes a variable's loading on a single factor, thus improving interpretation. Two commonly used factor rotation methods are the orthogonal factor rotation and the oblique factor rotation (Brown, 2006).

Orthogonal Factor Rotation

Orthogonal factor rotation is the simplest case of rotation, in which the factor axes are maintained at 90 degrees which means the factors are not correlated (Hair et al., 2010).

There are three major orthogonal methods: VARIMAX, QUARTIMAX and EQUIMAX.

The VARIMAX method maximizes the sum of variances of required loadings of the factor matrix (Hair et al., 2010). Each factor tends to have either large or small loadings of any particular variable (Garson, 2011). In a VARIMAX rotational approach, when the loadings are close to +1 or -1, it indicates a clear positive or negative association between the variable and the factor; and when the loading is close to 0, it indicates a lack of association (Hair et al., 2010). The VARIMAX method has proved successful as an analytic approach to obtaining an orthogonal rotation of factors (Hair et al., 2010).

The QUARTIMAX rotation attempts to maximize the spread of factor loadings for a variable across all factors. Consequently, a variable loads highly onto a single factor (Field, 2000). The QUARTIMAX method has not proved especially successful in producing simpler structures (Hair et al., 2010).

The EQUIMAX method is a compromise between the VARIMAX and QUARTIMAX methods. EQUIMAX tries to accomplish some simplification of factors and variables. However, EQUIMAX has not gained wide-spread acceptance and is used infrequently (Hair et al., 2010).

Oblique Factor Rotation

Oblique rotations are similar to orthogonal rotations, except that oblique rotations do not require the rotation process to keep the factors uncorrelated (Meyers, Gamst and Guarino, 2006). Oblique solutions have been found particularly useful in the theory building and play a significant role in the development of consumer behavior theory (Stewart, 1981). Two common methods in oblique factor rotation are OBLIMIN and PROMAX.

OBLIMIN is a standard method when seeking a non-orthogonal (oblique) solution. OBLIMIN can produce higher eigenvalues but diminished interpretability of the factors (Garson, 2011). PROMAS is similar to OBLIMIN but computationally faster than OBLIMIN and therefore is sometimes used for larger datasets (Garson, 2011). No specific rules have been developed to guide the researcher in selecting a particular orthogonal or oblique rotational technique (Hair et al., 2010). Correlated factors and hierarchical factor solutions are intuitively attractive and theoretically justified in many marketing applications (Stewart, 1981). Stewart (1981) suggests both an orthogonal and an oblique rotation should be performed, particularly in exploratory work. Therefore, in this research, a VARIMAX orthogonal rotation and an OBLIMIN oblique rotation are applied to the data.

4.7.1.7 Interpretation of Factors

In interpreting factors, decisions must be made regarding the factor loadings worth consideration and attention (Garson, 2011). The significance of factor loadings is dependent on the sample size (see Table 4.2). Normally, the larger the absolute size of the factor loadings, the more important the loading in interpreting the factor matrix (Hair et al., 2010). Hair et al. (2010) suggest factor loadings of ±0.30 and ±0.40 a minimal level; and factor loadings greater than ±0.50 practically significant. To be considered significant (Hair et al., 2010):

- A smaller loading is needed given either a larger sample size or a larger number of variables being analysed.
- A larger loading is needed given a factor solution with larger number of factors, especially in evaluating the loadings on later factors.

Table 4.2: Guidelines for Identifying Significant Factor Loadings Based on Sample Size (Hair et al., 2010, p.117).

Factor Loading	Sample Size Needed for Significant
0.30	350
0.35	250
0.40	200
0.45	150
0.50	120
0.55	100
0.60	85
0.65	70
0.70	60
0.75	50

* Significance is based on a 0.05 significance level and power level of 80 percent, and standard errors assumed to be twice those of conventional correlation coefficients.

Most factors solutions do not result in a simple structure solution where there is a single high loading for each variable loads on only one factor. Hence some variables may have moderate-size loadings on more than one factor and this is termed cross-loading. The researcher needs to underline all the significant loadings for a variable on all the factors. Furthermore, the researcher needs to examine all of the significant variables for a particular factor, and assign a name or label to a factor that accurately reflects the variables loading on that factor (Hair et al., 2010).

4.7.2 Summated Scale

A summated scale is formed by combining several individual variables into a single composite measure. All of the variables loading highly on a factor are combined, and the total, or more commonly, the average score of the variables is used as a replacement variable (Hair et al., 2010).

The summated scale reduces measurement error and represents the multiple aspects of concept in a single measure. However, before forming any a summated scale, the content validity, dimensionality, and reliability of the measure must be assessed (Hair et al., 2010).

4.7.2.1 Content Validity

Content validity assesses the correspondence of the variables to be included in a

summated scale (Hair et al., 2010). A display of content validity indicates that the items are adequate and are representative of the concept they are intended to measure (Churchill, 1979).

4.7.2.2 Dimensionality

Dimensionality is an underlying assumption and essential requirement for creating a summated scale is that the items are unidimensional and they are strongly associated with each other and represent a single concept (Hair et al., 2010). The test of unidimensionality is that each summated scale should consist of items loading on a single factor (Hair et al., 2010).

4.7.2.3 Reliability

Reliability measures the accuracy, precision and consistency between multiple measurements of variables (Cooper and Schindler, 2006). A commonly used measure of reliability is internal consistency, which applies to test whether the individual items of the scale measuring the same construct and thus be highly intercorrelated (Hair et al., 2010).

Cronbach's Alpha is one of the most widely used measures to test internal consistency (Churchill, 1979). Churchill (1979) recommends that a Cronbach coefficient alpha greater than 0.60 is adequate for expressing reliability in exploratory research.

4.7.3 Logistic Regression Analysis

4.7.3.1 Qualitative Choice Analysis

A Qualitative choice situation is one in which a decision-maker faces different options among which one has to be selected (Elleithy, 2008). Qualitative choice analysis is widely used in describing decision-makers' choices in certain areas such as transportation, energy, housing, telecommunications and banking (Train, 1993). The construction of qualitative choice models in which the dependent variable takes on a dichotomous or polychotomous character, have been applied to economic, business and marketing analysis (Greene, 2003). Generally, the purpose of qualitative response models is to determine the probability (or likelihood) that a decision maker, with a given set of attributes, makes one choice rather than the alternative (Liao, 1994).

Amemiya (1981) suggested that using qualitative choice modeling in economic and behavioural research has become more important because of the existence of many discrete variables. Ennew and Binks (1996) use a logit model to identify factors affecting bank customer retention and defection. Gan et al. (2006) apply a logit analysis to examine the consumers' choice of banking channels in New Zealand. In addition, Clemes, Gan and Zhang (2010) use logistic regression to analyze the factors that impact on Chinese customers' bank switching behaviour. Gounaris and Koritos (2008) also employ logistic regression analysis to investigate the drivers of the

Internet banking adoption decision in Greece.

Qualitative choice models are synonymous with discrete models (Greene, 2003). The nature of the choice to be made depends upon the problem faced by the decision maker. The restrictions placed upon the choices are (Elleithy, 2008; Train, 1993):

a. The number of alternatives in the set is finite;
b. The alternatives are mutually exclusive; that is, the person's choosing one alternative in the set necessarily implies that the person does not choose another alternative; and
c. The set of alternative is exhaustive; that is, all possible alternatives are included, and so the person necessarily chooses one alternative from the set.

Examples of determining qualitative choices include entering or not entering the labor market, or choosing between modes of transport (Train, 1993). Marketing researchers use qualitative choice models to study consumer demand and to predict competitive business responses, enabling choice modelers to solve a range of problems, such as product development and demand estimation (Garrow, 2010; Ida, 2009; Train, 1993). In this study, whether an individual chooses to adopt Internet banking or not adopt Internet banking falls into the realm of qualitative choice.

Any choice situation in which the decision or choice is represented by a continuous variable is not a qualitative choice situation (Train, 1993). Basically, qualitative choice models designate a class of models, such as logit and probit, which attempt to relate the probability of making a particular choice to various explanatory factors and calculate the probability that the decision-maker will choose a particular choice or decision from a set of choices or decisions (J_n), given data observed by the research. This choice probability (P_{in}) depends on the observed characteristics of the decision-maker (S_n). The choice probability can be specified as a parametric function of the general form (Train, 1993):

$$P_{in} = f(Z_{in}, Z_{jn}, S_n, \beta) \qquad (4.1)$$

Where f is the function relating the observed data to the choice probabilities specified up to some vector of parameters, β. By relating qualitative choice models to utility theory, a clear meaning of the choice probabilities emerges from the derivation of probabilities from utility theory. The utility from each alternative depends on various factors, including the characteristics of the decision-maker. By labeling the vector of all relevant characteristics of person n as r_n and the vector of all characteristics of alternative i chosen by person n as X_{in}, utility is a function of these factors (Train, 1993):

$$U_{in} = U(X_{in}, r_n) \qquad (4.2)$$

For all i in J_n, the set of alternatives.

Based on Marshall's consumer demand theory of utility maximization, the decision-maker therefore chooses the alternative from which he or she derives the greatest utility. The individual choice can be said to be deterministic, and he or she will choose i ($i \in J_n$) if $U(X_{in}, n_r) \geq U(X_{jn}, n_r)$, for ($i, j \in J_n$ and $j \neq i$). To specify the choice probability in qualitative choice models, $U(X_{in}, n_r)$ for each i in J_n can be divided into two sub functions, a systematic component that depends only on factors that the research observes and another that represents all factors and aspects of utility that are unknown or excluded by the research, labeled in ε_{in}. Thus,

$$U_{in} = U(X_{in}, r_n) = V(Z_{in}, s_n) + \varepsilon_{in} \qquad (4.3)$$

Where Z_{in} are the observed attributes of alternative in and s_n are the observable characteristics of decision-maker n.

$$P_{in} = P\left(U_{in} \geq U_{jn}\right) \quad \forall \quad i, j \in J_n \text{ and } i \neq j \qquad (4.4)$$

hence, $$P_{in} = P\left(V_{in} - V_{jn} \geq \varepsilon_{jn} - \varepsilon_{in}\right) \quad \forall \quad i, j \in J_n \text{ and } i \neq j \qquad (4.5)$$

Qualitative choice models are used to compute probability of choices being made, and they attempt to relate the probability of making a particular choice to various explanatory factors (Sellar, Chavas and Stoll, 1982). Probabilities have to be between

zero and one. Estimation of parameters to maximize the probability of the choice $Y_i = 1$ by use of a linear probability model and ordinary least squares (OLS) is not preferable due to the return of probabilities outside the unit interval (Stynes and Peterson, 1984). In addition, the use of a linear probability model causes heteroscedastic errors and as a consequence, t-tests of significance are not valid (Miller and Hay, 1981). Therefore, it is preferable to use either a logit or probit model.

Different qualitative choice models are obtained by specifying different distributions of unknown component of utility, ε_{in}, and deriving functions for the choice probabilities (Ben-Akiva and Lerman, 1995; Train, 1993). If the error term is assumed to be Gumbel-distributed, then the above represents the standard binary logit model. However, if the error term is assumed to be normally distributed, then the model becomes the binary probit model (Greene, 2003; Train, 1993; Ben-Akiva and Lerman, 1985). The binary logit model is used in this research because of the binary nature of the approach and the differences between the two models are slight (Maddala, 2001). The model is estimated by the maximum likelihood method used in LIMDEP version 7.0 software.

Thus, the choice probabilities can then be expressed as:

$P_{in} = e^{\mu V_{in}} / \sum_{j \in J_n} e^{\mu V_{jn}} \quad \forall \quad i, j \in J_n, \quad \mu =$ positive scale parameter, ie. $\mu > 0$.

or, $$P_{in} = 1/(1 + e^{-\mu[V_{in} - V_{jn}]}) \qquad (4.6)$$

The maximum likelihood estimator is consistent, asymptotically efficient[2] and asymptotically normal[3].

For example, consumers who are considering Internet banking services are faced with a simple binary choice situation; to adopt Internet banking, or not to adopt Internet banking. The consumer's utility associated with adopting Internet banking is denoted as U_{1n} and the utility associated with not adopting Internet banking as is denoted as U_{0n}, which is represented as:

$$U_{in} = V_{in} + \varepsilon_{in} \qquad \forall \qquad i \in J_n \text{ and } J_n = \{0,1\} \qquad (4.7)$$

The consumer will choose to adopt Internet banking if $U_{1n} > U_{0n}$, and the utility of each choice depends on the vector of observable attributes of the choices and the vector observable consumer characteristics, summarized as V_{in}. All unobservable and excluded attributes and consumer characteristics are represented by the error term, ε_{in}, that is assumed to be independently and identically Gumbel distributed. The choice probability of $U_{1n} > U_{0n}$ is given as

$P_{1n} = Pr_n(U_{1n} > U_{0n}) = 1/(1 + e^{-\mu[V_{in} - V_{jn}]})$, where $\mu > 0$. In an Internet banking decision, the vector of observable consumer characteristics is represented in

[2] Asymptotically efficient means that for large n, no other consistent estimator has a smaller variance.
[3] Asymptotically normal means that for large n, they closely approximate the normal distribution, even if the distribution from which the observations were drawn was not normal (Ramanathan, 1992).

parametric function form:

IBANK= f (CV, UFW, IA/IF, MC, WOM, PR, PI, SI, GEN, AGE, MAR, EDU, OCC,

INC, ε) (4.8)

Where IBANK is the dependent variable which identifies whether an individual has adopted or did not adopted Internet banking.

IBANK = 1 if the respondent has adopted Internet banking; 0 otherwise

CV = Convenience

UFW = User-friendly Website

IA/IF = Internet Access/ Internet Familiarity

MC = Marketing Communication

WOF = Word-of-Mouth

PR = Perceived Risks

PI = Price

SI = Self-Image

Demographic Characteristics:

GEN (+/−) = Dummy variables for gender

Gender; 1 if respondent is a male; 0 otherwise

AGE (+/−) = Dummy variables for age group

Age Group 1; 1 if respondent is between 18 to 35 years old;

0 otherwise

Age Group 2; 1 if respondent is between 36 to 50 years old;

0 otherwise

Age Group 3; 1 if respondent is 51 years old and over;

0 otherwise

MAR (+/−) = Dummy variables for marital status

Marital status 1; 1 if respondent is single/never married;

0 otherwise

Marital status 2; 1 if respondent is married; 0 otherwise

Martial status 3; 1 if respondent is divorced/separated or in a

de facto relationship; 0 otherwise

EDU (+/−)	=	Dummy variables for educational qualifications Education 1; 1 if respondent completed low-level education (e.g. Primary, Secondary, Fifth form, Bursary, Other); 0 otherwise Education 2; 1 if respondent completed middle-level education (e.g. Trade qualification, Diploma/Certification); 0 otherwise Education 3; 1 if respondent completed high-level education (e.g. Bachelor Degree, Postgraduate Degree); 0 otherwise
OCC (+/−)	=	Dummy variables for occupational status Occupation 1; 1 if respondent is professional; 0 otherwise Occupation 2; 1 if respondent is retired; 0 otherwise Occupation 3; 1 if respondent is sales (e.g. Sales/Services, tradesperson, clerical); 0 otherwise Occupation 4; 1 if respondents is others (e.g. student, labourer, farmer, unemployed, home maker, other); 0 otherwise

INC (+/−)	=	Dummy variables for annual income levels Income 1: 1 if respondent annual income is low income level (e.g. Under $10,000-39,000); 0 otherwise Income 2: 1 if respondent annual income is middle income level (e.g. $40,000-69,000); 0 otherwise Income 3: 1 if respondent annual income is high income level (e.g. $70,000 and over); 0 otherwise
ε	=	Error term

4.7.4 Statistical Assumptions for Logistic Regression

4.7.4.1 Outliers

Outliers are observations that have large residual values, or an observation that is far removed from the rest of the observations (Hair et al., 2010). Outliers can potentially influence the estimates of the regression parameters, and can produce confusing results and mask important information that could be obtained from the regression (Dielman, 2001; Maddala, 2001). Therefore, outliers should be deleted or modified from the analysis to reduce the disproportionate influences in the overall results (Aaker et al., 2005).

4.7.4.2 Linearity

Linearity predicts values that fall in a straight line by having a constant unit change of dependent variable for a constant unit change of the independent variable (Hair et al., 2010).

Logistic regression does not assume linear relationship between the dependent and the independent variables. However, it assumes a linear relationship between the independents and the log odds (logit) of the dependent (Garson, 2010). Linearity can be examined through residual plots (Hair et al., 2010). According to Norusis (1994), if the assumption of linearity is met, the residuals should be randomly dispersed around the horizontal line through zero.

4.7.4.3 Multicollinearity

Multicollinearity represents the degree to which any variable's effect can be predicted or accounted for by the other variables in the analysis. When multicollinarity arises, the ability to define any variable's effect is diminished (Hair et al., 2010). Logistic regression does not accept multicollinearity as the high interrelationship of the independent variables can cause the inflation of the standard error of the logit coefficients (Garson, 2010). Hair et al. (2010) suggest the simplest way to identify the collinearity between variables is to examine the correlation matrix for the independent variables. The acceptable level of correlation between each pair of the independent

variables should be at 0.80 or less (Bryman and Cramer, 1999).

4.7.4.4 Data Level

When the dependent variable is dichotomours (two categories), binary logistic regression is used, and when dependent variable is polytomous (three or more categories), multinomial logistic regression is applied (Dewberry, 2004). The independent variables may be either categorical (not numerical) or quantitative (numerical). In a logistic regression analysis, some of the categorical independent variables should be converted into dummy variables taking the values 0 and 1 (Freedman, 2005).

4.7.5 Sensitivity Analysis

Greene (2003) suggests that Maximum Likelihood Estimates (MLE) can be used to estimate the logit model because it assumes large sample properties of consistency, efficiency, normality of parameter estimates, and validity of the t-test significance. The logit model avoides the major problem associated with Ordinary Least Square (OLS) estimation of the standard linear probability model (Hair et al., 2010; Judge, Hill, Griffiths and Lee, 1982). The authors also find that the MLE coefficient estimates from the logit analysis have no direct interpretation with respect to the probability of the dependent variable (Y=1) other than indicating a direction of influence of probability.

Maddala (2001) recommends calculating changes in probabilities to indicate the magnitude of the marginal effect. This indicates the partial derivatives of the non-linear probability function evaluation at each variable's sample mean (Liao, 1994; Pindyck and Rubinfeld, 1997). The marginal effect also indicates the marginal change in the dependent variable, given a unit change in a selected independent variable, while holding other variables constant (Liao, 1994). Therefore, in order to rank the factors influencing customers to adopt Internet banking from the most the least important level, the marginal effect for each of the estimated coefficient were calculated.

4.7.6 T-test and Analysis of Variance (ANOVA)

T-test and Analysis of Variance (ANOVA) are two of the most common methods used in assessing group means. A T-test compares a dependent variable across two groups, while one-way AVONA is applied when there are three or more groups (Hair et al., 2010).

4.7.6.1 T-test

T-test assesses the statistical significance of the difference between two sample means for a single dependent variable. The test of differences between two group means can be conceptualized as the difference between the means divided by the variability of random means (Hair et al., 2010). Thus, the t statistic is a ratio of the difference

between the two samples to the standard error. In the case of the means for two independent samples, the hypotheses can be written in the following form:

$H_0: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$ (4.9)

The formula for calculating the t-statistic value is:

$$\text{T statistic} = \frac{\mu_1 - \mu_2}{SE\mu_1\mu_2} \quad (4.10)$$

where: μ_1 = Mean of Group 1

μ_2 = Mean of Group 2

$SE\mu_1\mu_2$ = Standard error of the difference in group means.

In this study, t-tests were used to test whether or not the mean sores of males and females are significantly different with respect to Internet banking adoption.

4.7.6.2 Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) is a statistical technique used to determine on the basis of one dependent measure, whether samples from two or more groups come from the populations with equal means (Hair et al., 2010). The authors suggest that ANOVA is valid only if it is assumed that the dependent variable is normally distributed, the groups are independent in their response on the dependent variable, and variances are equal for all treatment groups.

ANOVA compares two independent estimates of the variance for the dependent

variable. One reflects the general variability of respondents within the group (MS_w) and the other represents the differences between groups attributable to the treatment effects (MS_B) (Hair et al., 2010).

1. MS_w: Mean square within groups
2. MS_B: Mean square between groups

Given that null hypothesis of no group difference is not rejected, MS_w and MS_B represent the independent estimates of the population variance. Therefore, the ratio of MS_B to MS_w represents how much variance is attributable to the different treatments versus the variance expected from random samplings, and is calculated as the follows (Hair et al., 2010):

$$F_{statistic} = \frac{MS_B}{MS_w}$$

Although the F-test of ANOVA assesses the null hypothesis of equal means across all groups, the result cannot address which means are different (Hair et al., 2010). For example, in a three-group situation, all three groups may differ significantly, or two may be equal but differ from the third. Hair et al. (2010) suggest five common post hoc tests procedures: the Scheffe test, the Turkey's honestly significant difference test, the Turkey's extension of the Fisher least significant approach, the Duncan's multiple

range test, and New man-Kules test to identify which comparisons among groups (e.g., group 1 versus group 2 and 3) have significant difference (Hair et al., 2010). Of the five procedures, the Scheffe test is the most conservative method (Hair et al., 2010).

In this study, some demographic characteristics include three or more groups, such as age, marital status, education, occupation, and annual income. Therefore, the F-test for the ANOVA and the Scheffe test are used to test significant differences among these groups.

4.8 Chapter Summary

This chapter outlined the research plan and the research methodology used to test the fourteen hypotheses developed in Chapter Three. The research plan including the research design, sample size selection, sampling methods, data collection methods and survey questionnaire development were explained. The research methods, such as the factor analysis and logistic regression analysis were discussed.

Chapter 5 Results and Discussion

5.1 Introduction

This Chapter presents the results of the data analysis according to the research methods discussed in Chapter Four. The data set is examined to ensure the statistical assumptions of factor analysis and logistic regression analysis are met. The results of factor analysis, logistic regression analysis, T-tests, and ANOVA are presented, and the eighteen hypotheses are tested. The results are discussed in terms of their relation to each of the relevant research objectives.

5.2 Sample and Response Rate

A total of 462 survey questionnaires were returned from 1500 questionnaires distributed using the mail sampling method. Further, 28 questionnaires were returned to the sender as the addresses were no long current, 13 were not filled out, and 32 were partly filled out and not suitable for use. This resulted in 389 usable questionnaires, or a 25.9% useable response rate.

The usable responses were above the minimum sample size of 345 as suggested by Hair et al. (2010). In addition, Sekaran (2003) recommends that a quantity of useable questionnaires between 300 and 500 are the appropriate size for most behavioural research. Therefore, the sample size was considered to be acceptable for the purpose

of this research.

5.3 Descriptive Statistics

The descriptive statistics were obtained from the frequency analysis using SPSS version 17.0. The data in Table 5.1 shows the descriptive statistics for the respondents who adopted Internet banking and those who did not adopt Internet banking. From the total 389 useable questionnaires, 63.5% (247) of the respondents were Internet banking users, while 36.5% (142) of the respondents were non-Internet banking users. The sample respondents consisted of 47% (183) males and 52.4% (204) females, and 71.2% (277) of the respondents were married at the time of the survey. The dominant age groups were between 51 to 55 years old (17.5%) and 46 to 50 years (13.9%) old. The main qualification level for the sample respondents were Diploma/Certification (21.9%) and Bachelor Degree (18.3%). In terms of occupation, the dominant groups were respondents who worked as professional (35.2%) and retired (26.2%). In addition, the major income groups were between $40,000-$49,999 (14.7%) and $20,000-$29,999 (13.1%).

The demographic characteristics of the 247 respondents who adopted Internet banking and the 142 respondents who did not adopt Internet banking were similar in terms of gender, and marital status. However, the age, qualification, occupation and income characteristics for the respondents between the Internet banking users and

non-Internet banking users were different. The Young Age Group and Middle Age Group were more likely to adopt Internet banking than Old Age Group (see Table 5.1). The main qualification level of Internet banking users was Diploma/Certification (23.1%), compared to non-Internet banking users who had Secondary Education (22.5%). The dominant group who adopted Internet banking was Professional (48.6%), whereas the dominant group who did not adopt Internet banking was Retired (48.6%). Furthermore, the majority of Internet banking users had Middle and High Annual Incomes, compared to the majority of non-Internet banking users who had Low Annual Incomes.

5.4 Assessment of the Data Set

After the data was collected and tabulated, a series of statistical assumptions were met to ensure the appropriateness of the data for factor analysis and logistic regression analysis.

5.4.1 Statistical Assumptions for Factor Analysis.

In order to avoid the observed correlations between variables being diminished, the statistical assumptions of normality, homoscedasticity and linearity for factor analysis needed to be fulfilled. A data matrix that has sufficient correlation can be used to justify factor analysis (Hair et al., 2010). As discussed in Section 4.7.1.4, the statistical assumptions to test the data matrix include:

(i) Examination of the Correlation Matrix

(ii) Inspection of the Anti-image Correlation Matrix

(iii)Barlett's Test of Sphericity

(iv)Kaiser-Meyer-Olkin Measure of Sampling Adequacy

5.4.1.1 Examination of the Correlation Matrix

The correlation matrix (see Table 5.2) shows that most of substantial correlations are above 0.30 as recommend by Hair et al. (2010). The correlations indicated that the data shared common factors and was therefore appropriate for factor analysis.

5.4.1.2 Inspection of the Anti-Image Correlation Matrix

The visual inspection of the off-diagonal elements of the anti-image correlation matrix (see Table 5.3) shows that the majority of these values are close to zero (absolute value less than 0.01). This result indicates that the data set is appropriate for factor analysis (Hair et al., 2010).

5.4.1.3 Barlett's Test of Sphericity

Barlett's Test of Sphericity assesses whether the correlation matrix comes from a population of variables that are independent (Stewart 1981). If the test value is large and the level of signification is low, then the null hypothesis is rejected. Rejection of the null hypothesis is an indication that the data set is appropriate for factor analysis

(Stewart, 1981). The test value in this study (see Table 5.4) is large at 12587.048 and the level of significant is low 0.000. Therefore, the null hypothesis is rejected and the data set is appropriate for factor analysis.

5.4.1.4 Kaiser-Meyer-Olkin Measure of Sampling Adequacy

The Kaiser-Meryer-Olkin (KMO) Indix measures values from 0 to 1. In this study, the test result (see Table 5.4) is 0.925. According to Kaiser and Rice (1974), this MSA value is "marvelous" (0.90+), which indicates that the data set is appropriate for factor analysis.

5.4.2 Factor Analysis Results

The assessment of statistical assumption tests indicated that data set is appropriate for factor analysis. Therefore, principle component factor analysis was conducted on all of the items that were consistent with information derived from the literature review and focus group interviews. The results are interpreted using the following criteria.

5.4.2.1 The Latent Roots Criterion

Results of the latent root criterion indicate that eight factors should be extracted from the 41 variables submitted for factor analysis (see Table 5.5). These eight factors explain 70.98% of the variation in the data.

5.2.2.2 The Scree Test

Figure 5.1 shows that by laying a straight edge across the bottom portion of the roots, there are eight factors before the curve becomes approximately a straight line. This procedure indicates that the extraction of eight factors is appropriate for the factor analysis.

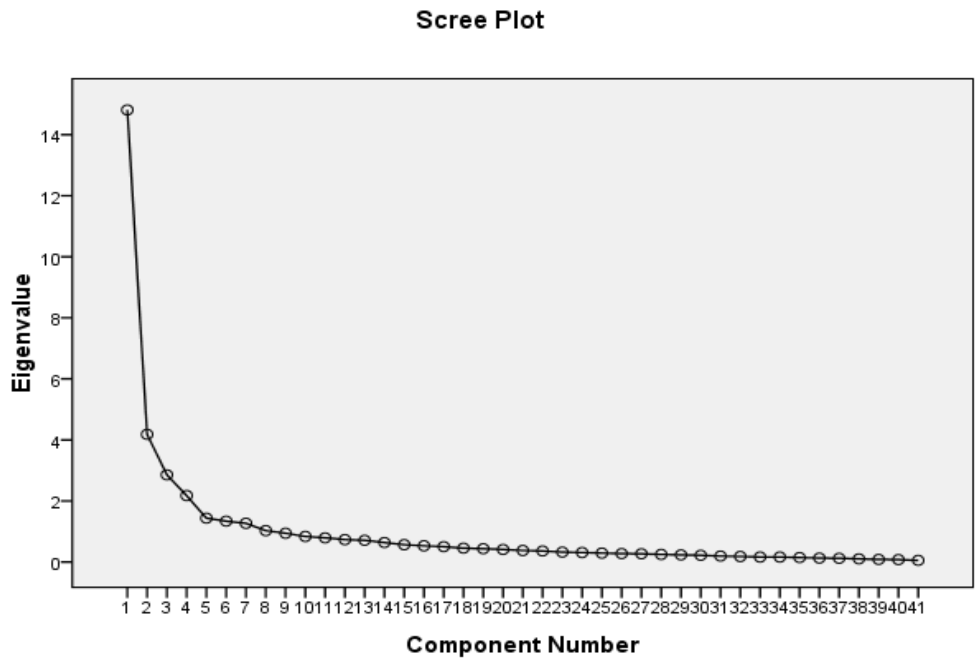


Figure 5.1 The Scree Plot

5.4.2.3 Factor Rotation

Factor rotation simplifies the factor structure and maximizes a variable's loading on a single factor, thus improving interpretation. Orthogonal factor rotation, such as VARIMAX and oblique factor rotation are commonly used factor rotation methods

(Brown, 2006). In this study, both the VARIMAX and OBLIMIN roations display similar factor loadings on most of the variables (see Table 5.6 and Table 5.7). However, the VARIMAX rotation produces a better structure in terms of content validity of the factors. Therefore, the final factor structure is based on the factor loadings from the VARIMAX rotation.

5.4.2.4 Factor Interpretation

Hair et al. (2010) suggest that for a sample size of approximately 350 respondents, factor loadings of 0.30 and above are significant. However, the authors also recommend that values greater than ±0.50 are considered more practically significant. Therefore, 0.50 is used as a cut-off point in this analysis as ±0.50 resulted in an improved factor structure.

The results (see Table 5.6) derived from VARIMAX rotation show all of the rotated items had significant loading above ±0.50. However, four variables (B37, B34, B36, B38) are excluded from the factor structure because the factor loadings of four variables are below ±0.50 and they do not load on any factors. In addition, three variables (B22, B39, B5) have significant cross loadings on two separate factors. The remaining 34 variables are cleanly sorted into 8 factors, and each factor is subsequently named according to the construct they represented (see Table 5.6 and Table 5.8). The eight factors are: (1) User-friendly Website; (2) Internet

Access/Internet Familiarity; (3) Perceived Risks; (4) Word-of-Mouth; (5) Price; (6) Convenience; (7) Marketing Communications; and (8) Self-Image

5.4.3 Assessment of Summated Scales

Before summation of the items, the content validity, dimensionality and reliability of measurement scales are assessed.

5.4.3.1 Content Validity

All of the items in the final VARIMAX rotation did not load exactly on the constructs as proposed in the development of the items in the survey questionnaire that were based on the results from the literature review and focus group discussions. However, all the variables (items) comprising each factor were inspected by the researcher and two marketing experts to ensure that the variables are adequate and a thorough representation of the construct under investigation. Following this assessment, all eight factors were considered to have adequate content validity.

5.4.3.2 Dimensionality

As discussed in Section 5.4.2.4, three variables (B22, B39, B5) out of a total of 41 variables loaded on two factors, indicating that these variables are associated with two factors. Variable B22 and variable B5 highly loaded on one factor, and moderately loaded on a different factor in the component matrix. Hence, B22 and B5 were

considered to represent the most highly loaded factors, which are Factor 2 and Factor 6 respectively. However, variable B39 exhibited very similar loadings on the two factors and excluded from the data set.

5.4.3.3 Reliability

The remaining 35 variables (items) were subjected to reliability testing, except for variable B35, which consisted of only one item representing Factor 8. The Coronbach's Alpha coefficient was used to measure reliability. According to Churchill (1979), a Cronbach's t Alpha of 0.60 or above is deemed to produce a reliable measure in the exploratory research. The variables used in the summated scale and their Cronbach's Alpha coefficients are presented in Table 5.9.

5.4.4 Statistical Assumptions for Logistic Regression Models

A series of statistical assumptions tests were conducted to ensure that the data met the assumptions for logistic regression analysis.

5.4.4.1 Outliers

The outliers were identified and removed from the analysis in order to reduce the effects of their influence on the regression analysis (Aaker et al., 2005).

5.4.4.2 Multicollinearity

The Person Correlation Matrix was used to inspect the correlation between the independent variables. The result (see Table 5.10) shows that the correlations are all below 0.80, indicating no multicollinearity problems were found in the regression models.

5.4.4.3 Data Level

Due to the dichotomous nature of the dependent variable (adopt or non-adopt), binary logistic regression was used in this study (Garson, 2010). All of the demographic items which are categorical characteristics are coded as dummy variables in the analysis.

5.5 Results Relating to Research Objective One

Research Objective One is to identify the factors that affect bank customers' adoption of Internet banking. Logistic regression analysis was used to satisfy Research Objective One (Hypothesis 1 through 8). Table 5.11 shows the logistic regression results. The logistic regression model containing all predictors is statistically significant (Chi-Square = 441.43, P value = 0.000, Degrees of Freedom = 15). The summary results of logistic regression are show in Table 5.12.

Table 5.12: Summary of Logistic Regression Results

Factors	B	S.E.	Sig.
User-friendly Website	4.34348	0.85407	0.0000***
Internet Access/ Internet Familiarity	0.67361	0.34057	0.0479**
Perceived Risks	-2.29629	0.53547	0.0000***
Price	0.74892	0.33167	0.0239**
Marketing Communications	-3.11289	0.64757	0.0000***
Gender	-1.52859	0.78625	0.0519*
Young Age Group	1.19739	0.58619	0.0411**
Old Age Group	-1.20401	0.58475	0.0395**
Low Qualification Group	-1.85254	0.84043	0.0275**
Low Income Group	-1.58290	0.55213	0.0041***
High Income Group	1.41504	0.54473	0.0094***

Note: ***, **, * ==> Significance at 1%, 5%, 10% level.

consequently, the results for Hypotheses 1 to 8 are summarized in the following table.

Table 5.13: Hypotheses 1 to 8 Test Results Summary

Hypotheses	Supported	Not Supported
H1: There is a positive relationship between perceived convenience and Internet banking adoption.		√
H2: There is a positive relationship between a user-friendly website and Internet banking adoption.	√	
H3: There is a positive relationship between the availability of Internet access/Internet Familiarity and Internet banking adoption	√	

Table 5.13: Hypotheses 1 to 8 Test Results Summary (continued)

Hypotheses	**Supported**	**Not Supported**
H4: There is a negative relationship between ineffective marketing communications and Internet banking adoption.	√	
H5: There is a positive relationship between positive word-of-mouth and Internet banking adoption.		√
H6: There is a negative relationship between higher perceived risks and Internet banking adoption.	√	
H7: There is a positive relationship between a lower price paid for Internet services by consumers and Internet banking adoption.	√	
H8: There is a positive relationship between self-image and Internet banking adoption.		√

The results presented in Table 5.12 and Table 5.13 show that User-friendly Website, Internet Access/Internet Familiarity, and Price positively influence customers to adopt Internet banking. Therefore, Hypothesis 2, Hypothesis 3, and Hypothesis 7 are supported. A significant negative relationship between Marketing Communications and Internet banking adoption supports Hypothesis 4. Similarly, there is a significant negative relationship between Perceived Risks and Internet banking adoption. Thus, Hypothesis 6 is supported as well.

The results do not show significant relationships between Convenience,

Word-of-Mouth, and Self-Image and Internet banking adoption. Hence, Hypothesis 1, Hypothesis 5 and Hypothesis 8 are rejected.

5.6 Results Relating to Research Objective Two

Research Objective Two is to determine the most important factors that affect bank customers' adoption of Internet banking. Marginal effect analysis was used to satisfy Research Objective Two. Table 5.14 summarizes the ranked results of the influencing factors derived from the factor analysis and the logistic regression model.

Table 5.14: Marginal Effects of Customers' Adoption of Internet banking

Factors	**Marginal Effect**	**Ranking**
User-friendly Website	0.19566	1
Marketing Communications	-0.14023	2
Low Qualification Group	-0.11219	3
Perceived Risks	-0.10344	4
Low Income Group	-0.07131	5
Gender	-0.06886	6
High Income Group	0.06374	7
Old Age Group	-0.05424	8
Young Age Group	0.05394	9
Price	0.03374	10
Internet Access/Internet Familiarity	0.03034	11

Table 5.14a: Marginal Effects of Influencing Factors Summary (exclude Demographic Characteristics)

Factors	Marginal Effect	Ranking
User-friendly Website	0.19566	1
Marketing Communications	-0.14023	2
Perceived Risks	-0.10344	3
Price	0.03374	4
Internet Access/Internet Familiarity	0.03034	5

Table 5.14a is derived from Table 5.14 which shows the summary of marginal effects of influencing factors exclude demographic characteristics. From the results of the marginal effects Table 5.14a shows, User-friendly Website has the maximum impact on customers' adoption of Internet banking. The marginal effect of User-friendly Website indicates that a unit increase in User-friendly Website results in an estimated 19.57% increase in the probability of a customer adopting Internet banking. Marketing Communications has the second highest impact on customers' adoption of Internet banking. A unit decrease in effective Marketing Communications results in a 14.02% probability that a customer will not adopt Internet banking. The third most important factor influencing customers to adopt Internet banking is Perceived Risks. The marginal effect of Perceived Risks suggests a unit decrease in Perceived Risks results an estimated 10.34% increase in the probability that a customer will adopt Internet banking. In addition, the marginal effect of Price indicates that a unit increase in Price (e.g. in-branch transaction fees or counter services fees) leads to an estimated 3.37% probability that a customer will choose Internet banking. Further, Internet Access/Internet Familiarity ranks as the fifth most important factor that influences

customers' adoption of Internet banking. A unit increase Internet Access/Internet Familiarity results in an estimated 3.03% increase in the probability of adopting Internet banking.

Table 5.14b: Marginal Effects of Customers' Demographic Characteristics

Factors	Marginal Effect	Ranking
Low Qualification Group	-0.11219	1
Low Income Group	-0.07131	2
Gender	-0.06886	3
High Income Group	0.06374	4
Old Age Group	-0.05424	5
Young Age Group	0.05394	6

Table 5.14b is derived from Table 5.14 which shows the marginal effects of the respondents based on consumers' different demographic characteristics. The results in Table 5.14b show that the Low Qualification Group (Primary Qualification, Secondary Qualification, Fifth form Qualification and Bursary Qualification) is the most likely demographic factor that influences consumers not to use Internet banking. The marginal effect suggests that if consumers have a low qualification (e.g. Primary Qualification), the probability of adopting Internet banking decreases by 11.22%. The marginal effect results indicate that the second and third most likely groups to Internet banking adoption are the Low Income Group (under $40,000) and Gender. For example, the results show that if consumers have low income (under $40,000), it results in a 7.13% decrease in the probability of adopting Internet banking. If

consumers are female, the probability of adopting Internet banking increases by 6.88%. High Income Group (over $70,000) is the Fourth most likely group to bank online with a probability of 6.37%. Furthermore, the marginal effect results show that Old Age Group (over 51 years) and Young Age Group (18-35 years) are the fifth and sixth most important demographic factors that influence consumers' decision to adopt Internet banking respectively. For example, if consumers are in an old age group (over 51 years), it results in a 5.42% decrease in the probability of adopting Internet banking. If consumers are in a young age group (18-35 years), it results in a 5.39% increase in the probability of banking using the Internet.

5.7 Results Relating to Research Objective Three

Research Objective Three is to examine the impacts of the demographic characteristics on bank customers' adoption of Internet banking. Logistic regression analysis was used to test Hypotheses 9 to 15 to answer Research Objective Three. Table 5.15 (based on the logistic regression results shown in Table 5.12 in Section 5.5) shows the summary test results for Hypotheses 9 to 16.

Table 5.15: Hypotheses 9 to 18 Test Results Summary

Hypotheses	Supported	Not Supported
H9: There is a positive relationship between females and consumers' adoption of Internet banking.	√	
H10: There is a positive relationship between younger age and consumers' adoption of Internet banking.	√	
H11: There is a negative relationship between older age and consumers' adoption of Internet banking.	√	
H12: There is a positive relationship between marital status and consumers' adoption of Internet banking.		√
H13: There is a positive relationship between higher-level occupations and consumers' adoption of Internet banking.		√
H14: There is a positive relationship between a higher educational level and consumers' adoption of Internet banking.		√
H15: There is a negative relationship between a lower educational level and consumers' adoption of Internet banking.	√	
H16: There is a positive relationship between higher incomes and consumers' adoption of Internet banking.	√	
H17: There is a negative relationship between lower incomes and consumers' adoption of Internet banking.	√	
H18: There are some different perceptions of the Internet banking adoption factors between demographic characteristics	√	

The test results in Table 5.15 (based on the logistic regression results shown in Table 5.12 in Section 5.5) show that the Gender coefficient is negative and significant at the 0.10 level of significance, which suggests that Females are more likely to adopt Internet banking than Males. Hence, Hypothesis 9 is supported. In addition, the Young Age Group coefficient (18 to 35 years) is positive and is significant at the 0.05 level of significance, which indicates that young customers are most likely to adopt Internet banking than the other age groups. Therefore, Hypotheses 10 is supported. The coefficients of Old Age Group (over 51 years) and Low Qualification Group (Primary Qualification, Secondary Qualification, Fifth form Qualification and Bursary Qualification) are negative and significant at the 0.05 level of significance, which indicate that Old Age Group and Low Qualification Group are less likely to adopt Internet banking than the other age groups and the other qualification groups. Therefore, Hypotheses 11 and 15 are supported. There is also a positive and significant relationship between High Income Group (over $70,000) and Internet banking adoption as the coefficient value for the High Income Group is significant at the 0.01 level of significance, which indicate that High Income Group is more likely to adopt Internet banking than the other income groups. Thus, Hypothesis 16 is supported. Furthermore, the Low Income Group (under $40,000) has negative and significant effect on Internet banking adoption, which indicates that the respondents who have low incomes are less likely to adopt Internet banking than the other income groups. Therefore, Hypothesis 17 is supported.

However, the coefficient values for the Married Group, Professional Group, and High Qualification Group (Bachelor Degree and Postgraduate Degree) are not statistically significant. Hence, Hypothesis 12, 13 and 14 are rejected.

In addition, the T-test and ANOVA were employed to test Hypotheses 18 to examine whether there are any different perceptions about adopting Internet banking between the different demographic groups. The T-test results in Table 5.16 show that Males and Females have a different perception for Perceived Risks and Price in Internet banking adoption. Consumers of different ages, marital status, and with different qualifications, occupations, and annual incomes attribute different amounts of importance to the influencing factors of Internet banking adoption: User-friendly Website, Internet Access/Internet Familiarity, Perceived Risks, Word-of-Mouth, Price, Convenience, and Marketing Communications. However, Self-Image is not considered differently by consumers with different demographic characteristics (see Table 5.17 to Table 5.21). Therefore, Hypothesis 18 is partially supported.

5.7.1 Age Relating to Internet Banking Adoption

The results (see Table 5.22) indicate that User-friendly Website is more important for the Middle Age Group than the Old Age Group in the adoption of Internet banking. However, the Old Age Group view Marketing Communications as more important, compared to the Middle Age Group. In addition, the Old Age Group considers

Word-of-Mouth as a more important factor than the Young Age Group. In contrast, the Young Age Group considers Price as more important, compared to the Old Age Group.

5.7.2 Martial Status Relating to Internet Banking Adoption

The results (see Table 5.23) indicate that respondents in the Married Group and the Other Relationships Group perceive User-friendly Website as more important than the respondents in the Single/Never Married Group in the adoption of Internet banking. The Married Group also considers Convenience to be more important than the Single/Never Married Group in the adoption of Internet banking. However, The Single/Never Married Group and Other Relationships Group consider Marketing Communications as more important, compared to the Married Group. In addition, the Other Relationships Group views Internet Access/Internet Familiarity as more important than the Single/Never Married Group.

5.7.3 Qualification Relating to Internet Banking Adoption

The results (see Table 5.24) show that Convenience is more important to the High Qualification Group than the Middle Qualification Group. Furthermore, Marketing Communications is more important to the Low Qualification Group than the High Qualification Group in the adoption of Internet banking.

5.7.4 Occupation Relating to Internet Banking Adoption

User-friendly Website and Price are perceived to be more important factors by the Professional Group and Sales Group than the Retired Group when they make decision to adopt Internet banking. The Professional Group also considers Convenience to be more important compared with the Retired Group in the adoption of Internet banking. However, the Sales Group, Retired Group and Others Group are more concerned with Marketing Communications compared to the Professional Group when they make decision to use Internet banking (see Table 5.25).

5.7.5 Income Relating to Internet Banking Adoption

The Middle Income Group and the High Income Group perceive User-friendly Website, Price, and Convenience to be more important than the Low Income Group in the adoption of Internet banking. However, the respondents in the Low Income Group and the Middle Income view Marketing Communications as more important factors compared to the respondents in the High Income Group in the adoption of Internet banking (see Table 5.26).

5.8 Chapter Summary

This chapter presents the results based on the research plan and methodology discussed in Chapter Four. The results from factor analysis formed a valid and reliable factor structure with eight factors in the Internet banking adoption factors model. The

logistic regression results indicated five significant factors influenced Internet banking adoption. The marginal effects ranked the factors influencing Internet banking adoption from the most to the least important. Finally, ANOVA and T-tests indicated customers with different demographic characteristics have different perceptions of the factors that influence Internet banking adoption.

Chapter 6 Conclusions and Implications

6.1 Introduction

This chapter reviews the research findings presented in Chapter Five and discusses their theoretical and managerial implications. The research limitations and directions for future research are also discussed.

The three Research Objectives stated in this study were addressed by testing 15 hypotheses. Hypotheses 1 through 8 relate to Research Objective One. Hypotheses 9 through 15 relate to Research Objective Three. Research Objective Two was satisfied by examining the most important factors influencing customers to adopt Internet banking.

6.2 Conclusions Relating to Research Objective One

Research Objective 1: To identify the factors that affect bank customers' adoption of Internet banking in New Zealand.

Research Objective One was satisfied as the factors affecting bank customers' adoption of Internet banking in New Zealand were identified. The results of the logistic regression analysis show that the factors: User-friendly Website, Internet Access/Internet Familiarity, Marketing Communications, Perceived Risks, and Price

influence customers' decisions to adopt Internet banking. Consequently, Hypotheses 2, 3, 4, 6 and 7 were supported, while Hypotheses 1, 5, and 8 were rejected.

The support for Hypothesis 2 confirms that User-friendly Website positively influences customers to adopt Internet banking services. This result is consistent with the findings of Padachi et al. (2007), Litchtenstein and Williamson (2006), Akinci et al. (2004), and Sohail and Shanmugham (2003). For example, Padachi et al. (2007) and Lichtenstein and Williamson (2006) find that a user-friendly bank website is an important determinant of ease of use, which affects the adoption of Internet banking services in Mauritius and Australia. The support for Hypothesis 3 confirms that Internet Access/Internet Familiarity positively influences customers to adopt Internet banking. This result is consistent with the findings of Polasik and Wisniewski (2009), Lassar et al. (2005), and Sohail and Shanmugham (2003). For instance, Sohail and Shanmugham (2003) find that Internet access is one of the main factors that influence the adoption of Internet banking in Malaysia. Polasik and Wisniewski (2009) and Lassar et al. (2005) observe that Internet familiarity is an important factor that contributes customers to adoption of Internet banking in Poland and the U.S.

The support for Hypothesis 4 confirms that ineffective marketing communications have a negative relationship with Internet banking adoption. This result is in accordance with the findings of Laukkanen et al. (2009) and Lichtenstein and Williamson (2006) as these authors regard marketing communications as an important

factor that influence customers' adoption of Internet banking. In addition, the support for Hypothesis 6 confirms there is a negative relationship between perceived risks and customers' adoption of Internet banking. This result is consistent with the findings of Lee (2009), Kuisma et al. (2007), Polatoglu and Ekin (2001), Tan and Teo (2000) as these authors identify perceived risks as having a significant negative and direct effect on customers' adoption of Internet banking.

Further, there is support for Hypothesis 7, proposing that a lower price paid for Internet banking transactions is an influential factor that has a positive relationship with Internet banking adoption. This result is consistent with the findings of Kerem (2003), Athanassopuolos and Labroukos (1999), and Karjaluoto et al. (1999). For example, Kerem (2003) indicates that Internet banking is lower priced and that price incentives have been successfully used by banks to motivate consumers to use Internet banking in Estonia.

However, the rejection of Hypothesis 1 does not support the findings of Padachi et al. (2007), Gerrard and Cunningham (2003), and Bughin (2000) regarding the influence of Convenience on Internet banking adoption. Similarly, the rejection of Hypothesis 5 does not support the findings of Kim and Prabhaker (2000) who determined that Word-of-Mouth (WOM) has an effect on Internet banking adoption in the United States. Finally, the rejection of Hypothesis 8 does not support the findings of

Globerson and Maggard (1991) who determined that Self-image influences Internet banking adoption.

6.3 Conclusions Relating to Research Objective Two

Research Objective 2: To determine the most important factors that affect customers' adoption of Internet banking in New Zealand.

The marginal effect results show that User-friendly Website has the maximum impact on customers' adoption of Internet banking. Marketing Communications and Perceived Risks are the second and third important factors influencing customers' adoption of Internet banking. The fourth and fifth most important factors are Price and Internet Access/Internet Familiarity respectively (see Table 5.14a in Chapter Five).

With regards to the demographic characteristics, the Low Qualification Group has the maximum impact on customers' adoption of Internet banking, followed by the Low Income Group. The third most important demographic characteristic impacting on customers' adoption of Internet banking is the Gender Group (Females). The High Income group is the fourth most important group, followed by the respondents in the Old Age Group and, lastly Young Age Group (see Table 5.14b).

6.4 Conclusions Relating to Research Objective Three

Research Objective 3: To determine the impact that the demographic characteristics have on Internet banking in New Zealand.

Research Objective 3 was satisfied. However, only Gender, Age, Education and Income impact on customers' decisions to adopt Internet banking. The logistic regression results reveal that the Female, Young Age, and Higher Income Groups are positively associated with Internet banking adoption. Therefore, Hypotheses 9, 10, and 16 are supported. These results are consistent with findings of Gao and Owolabi (2008), Yiu et al. (2007), Kim et al. (2005); Sohail and Shanmugham (2003) and Polatoglu and Ekin (2001). For example, Gao and Owolabi (2008) find that female respondents are more likely to adopt Internet banking than males in Nigeria. Kim et al. (2005) note that when compared to older consumers, younger consumers are more likely to adopt Internet banking in the United States. Padachi et al. (2007) indicate that higher levels of income respondents are more likely to use Internet banking services in Mauritius. Sohail and Shanmugham (2003) and Polatoglu and Ekin (2001) conclude that young and affluent people are more likely to use Internet banking services in Malaysia and Turkey. In addition, the logistic regression results show that being in the Old Age, Low Qualification and Low Income Groups negatively influence customers' decisions to adopt Internet banking. These results are consistent with and Flaviá n et al. (2006) and Gerrard et al.'s (2006) findings. For instance,

Gerrard et al. (2006) find that less-educated people are less likely to use Internet banking in Singapore. Flaviá n et al. (2006) report that older and lower income groups are less likely to conduct their banking operations using the Internet in Chile. Therefore, Hypotheses 11, 15, and 17 are supported.

The T-test and AVONA results show that customers with different gender, age, marital status, qualifications, occupations and incomes, have different perceptions of the Internet banking adoption factor: User-friendly Website, Internet Access/Internet Familiarity, Perceived Risks, Word-of-Mouth, Price, Convenience, and Marketing Communication. Hence, Hypotheses 18 is partially supported.

In terms of the marginal effects, the Low Qualification Group is the most likely group to adopt Internet banking, followed by the Low Income Group, the Gender Group, the High Income Group, the Old Age Group and the Young Age Group (see Table 5.15).

However, there are no clear relationships between the Marital Status, Occupations and High Qualification Groups and their adoption of Internet banking. Thus, Hypotheses 12, 13 and 14 are not supported. These results are consistent with some research findings, such as Gan et al. (2006) and Sathye (1999). Gan et al.'s (2006) results show that Marital Status does not have an impact on a consumer's decision to use electronic banking in New Zealand. In Lee and Lee (2000) and Sathye's (1999) studies, the

authors identify that there is no statistically significant difference between any groups in terms of occupation, education and the adoption of Internet banking in the U.S and Australia.

6.5 Theoretical Implications

This research makes a number of contributions to the banking industry. First, this research contributes to the limited empirical studies currently available on consumers' adoption of Internet banking, especially in the New Zealand banking context. The study provides a more comprehensive understanding of consumers' adoption of Internet banking in New Zealand by empirically identifying the factors that influence customers to adopt Internet banking.

Secondly, this research used a logistic regression analysis to examine consumers' adoption of Internet banking. The results of this research support logistic regression analysis as an appropriate method to examine consumers' choice decisions regarding Internet banking services.

Thirdly, this research confirms that some of the factors influencing consumers' adoption of Internet banking indentified in previous research in other countries can also be applied to the New Zealand banking market, such as a User-friendly Website, Marketing Communications, Perceived Risks, Price and Internet Access/Internet

Familiarity.

6.6 Managerial Implications

User-friendly Website

This research reveals that a User-friendly Website has the strongest influence on New Zealand bank customers' adoption of Internet banking. This result is consistent with a number of researchers that indicate a user-friendly website is an important determinant that affects the adoption of Internet banking (Akhlaq, 2011; Padachi et al., 2007, Litchtenstein and Williamson, 2006; Jaruwachirathankul and Fink, 2005; Akinci et al., 2004; Sohail and Shanmugham, 2003).

A user-friendly website design, in respect to information availability and ease of use, affect consumers' choices of Internet banking use (Lichtenstein and Williamson, 2006). Akhlaq (2011) conclude that unfriendly website has discouraged consumers from using Internet banking technology. Jaruwachirathankul and Fink (2005) explain that it is essential for banks to provide a well-designed and user-friendly website to attract potential adopters' attention.

In order to enhance the adoption rate of Internet banking, banks should develop the user-friendliness of their website by considering several factors, such as clear and comprehensible instructions which are easy to read, prompt processing of transactions,

and a wide range of services. In addition, bank websites should be available 7 days and 24 hours and banks should regularly provide accurate information and update records on their websites. Khan (2007) reports that pages download times is a major concern of Internet banking customers, therefore materials on a website should not take excessive time to download and a bank's website should execute transactions quickly and efficiently. Conducting a pilot test of banks website to obtain the feedbacks of consumers is also important as it can help banks to improve the user-friendliness of their websites. To be effective, bank management should put in place procedures for maintaining and updating their websites by developing Internet banking technology including ease of use, comprehensive information on the site, fast downloading of materials, and effective communication with customers.

Marketing Communications

This research reveals that Marketing Communications also has a strong influence on customers' decisions to adopt Internet banking. This result is consistent with several researchers that found Marketing Communications effects consumers' adoption of Internet banking (Laukkanen et al., 2009; Prasad and Arumbaka, 2009; Lichtenstein and Williamson, 2006; Polatoglu and Ekin, 2001). Prasad and Armbaka (2009) show that most non-Internet banking customers have a lack of awareness of Internet banking services due to a lack of marketing effort on the part of banks. Therefore, a lack of awareness suggests the need for banks to provide an aggressive marketing

communications targeting non adopters (Lichtenstein and Williamson, 2006).

Banks should use effective media advertising such as radio and TV advertisement, leaflets, brochures, and web pages to introduce Internet banking services to a wider audience and educate potential customers about how to become Internet banking users, the range of services Internet banking provides, and the benefits of Internet banking. To access more adopters, information about Internet banking should be also provided by bank tellers and bank assistants at bank branches. The information should include references to time saving, convenience, low cost and information availability. Banks should emphasise the positive attributes of Internet banking in their marketing campaigns. Banks can also advertise the safety of their websites and announce publicly the efforts to maintain this safety to increase the level of customer trust for the banks and enable Internet banking to be viewed more favorably.

Perceived Risks

This study reveals that Perceived Risks is an important factor influencing customers' adoption of Internet banking. Several researchers indicate that Perceived Risks plays an important role when bank customers decide to adopt Internet banking services (Lee, 2009; Kuisma et al., 2007; Polatoglu and Ekin, 2001; Tan and Teo, 2000). Therefore, banks need to search for risk-reducing strategies that can assist in inspiring high confidence in potential customers.

In New Zealand, Security/Privacy in terms of authorized use and abuse of accounts, and keeping customers' personal details private is a concern to the majority of customers and it affects the adoption of Internet banking (Chung and Paynter, 2002). To overcome such risk issues, bank management should take steps to manage and minimize perceived security risks. Bank management should consider focusing on the prevention of intrusion, fraud and identity theft. Banks can use encryption, firewall, intrusion detection and other related security devices to properly safeguard their Internet banking security systems. Banks should also advise customers about how best to protect online accounts. For example, banks should advise customers never to respond to e-mails requesting confirmation of logins and passwords, memorize their password and refrain from writing it down, and not keep savings account details in an open file on a hard drive. Banks should also recommend that customers install a firewall, anti-virus and anti-spyware and software on their computers (Polasik and Wisniewski, 2009). In addition, banks should emphasis that the online systems are only accessible to registered customers who use the correct password and the customers' information remains confidential at all times. Furthermore, banks should develop service recovery programmes to provide a guarantee for every transaction to increase confidence in their Internet banking services.

Price

The results of this study confirm that Price is another important factor influencing

consumers to adopt Internet banking, supporting the findings of Sathye (1999), Kerem (2003) and Kajaluoto et al. (1999). Sathye (1999) argues that, in the context of Internet banking, two kinds of price are involved: the normal cost associated with internet activities, such as cost of computers and Internet connection, and the bank costs and charges.

Internet banking reduces a bank's operating costs and improves a bank's competitiveness (Rotchanakitumnual and Speece, 2003). The more customers that use Internet banking services, the larger the potential savings (Polatoglu and Ekin, 2001). In order to attract more customers to adopt Internet banking services, banks should implement pricing strategies. For example, banks can charge higher fees for the transactions at bank branches, but offer lower fees or free services for Internet banking transactions. As a result, customers should be positively motivated to adopt lower cost Internet banking rather than using higher priced branch services. Banks can also reduce home loan interest rates or pay higher interest rates on deposits for online accounts. Banks might consider encouraging the purchase of a PC through a low-interest rate loan and offer incentives such as free internet access dial-up.

However, non-Internet banking users may see no major financial benefits in becoming an Internet banking customers. Therefore, banks should explain the extent of financial benefits by making comparisons of how fees associated differ between traditional

banking and Internet banking.

Internet Access/Internet Familiarity

Another valuable finding from this study is the importance of Internet Access/Internet Familiarity as an antecedent of Internet banking adoption, supporting the findings of Polasik and Wisniewski (2009); Lichtenstein and Williamson (2006); Centeno (2004); Karjaluoto et al. (2002) and Lee and Lee (2001). Centeno (2004) identifies that the pre-existence of PC and Internet access and literacy are a pre-requisite for Internet banking adoption. Familiarity with the Internet environment encourages acceptance of Internet banking by individuals who have used the Internet for a long period.

Karjaluoto et al. (2002) find one reason many non-users do not adopt Internet banking is that they do not have access to the Internet. In order to increase the rate of Internet banking adoption, banks should provide free access to their networks in bank branches or public places, such as shopping centres. Banks may also be able to collaborate with Internet service providers to offer free networks to non-Internet users. Gerrard and Cunningham (2003) find that some customers do not adopt Internet banking because of their lower computation proficiency and Internet skills. Karjaluoto et al.'s (2002) find that customers with a good knowledge of computer and Internet technologies are generally more likely to adopt Internet banking. Therefore, banks should provide free hands-on computer and Internet training projects to educate

people on how to use Internet banking. In addition, banks could provide Internet banking training using DVDs to offer Internet banking operating instructions and illustrate the benefits of Internet banking.

Demographic Characteristics

The empirical results reveal that the Low Qualification Group has the highest impact on customers' adoption of Internet banking and this result is consistent with the findings of Yiu et al. (2007) and Gerrard et al. (2006). The Low Qualification Group consumers are less likely to adopt Internet banking because generally they lack knowledge of computer technology and lack computer skills when compared to consumers in the High Qualification Group. Less-educated people may not be familiar with the Internet and they may find Internet banking is too complex to use. Kim et al. (2005) conclude that when education levels increase, households are more likely to use Internet banking. Therefore, banks should provide free computer education and training about Internet banking to bank customers. When customers gain more knowledge and skills about computers and the Internet, they may perceive Internet banking as more easily to use and be more likely to adopt Internet banking.

The Low Income Group is less likely to adopt Internet banking, and the High Income Group is more likely to adopt Internet banking. These results are consistent with Flaviá n et al. (2006) findings. A possible explanation for this result is that people with

higher incomes are more likely to possess a personal computer and pay Internet fees compared to less-wealthy people. In addition, a high household income may mean that a customer has more financial resources to manage, and thus a stronger need for a channel with high level of flexibility, such as Internet banking. To enhance the rate of Internet banking adoption, banks should provide the public with free access to Internet banking facilities so as to motivate low income people to adopt Internet banking services. Moreover, adding convenience by developing the valuable features of Internet banking may be necessary to attract additional people with high incomes. For example, developing bank web navigability could improve self-sufficiency and time savings for high income individuals.

Gender also influences the preference for Internet banking. The empirical results in this study show that females are more likely to use Internet banking than males. This result is similar to findings in Gao and Owolabi (2008) and Lichtenstein and Williamson's (2006) studies. Lichtenstein and Williamson (2006) note that in Australia, female users are more likely to do Internet banking because these women have busy lives raising children and managing households and often working part or full time. Therefore, they need the convenience of Internet banking to manage their accounts and finances at any time. Polatoglu and Ekin (2001) note that for consumers with a busy lifestyle, the need for online banking are clear as a large numbers of females are expected to use Internet banking to pay household bills and complete

other financial transactions at their convenience. Thus, banks should provide various services to meet female customers' needs, including account management, financial management, foreign exchange, insurance, payments, and loan services.

This study reveals that the Young Age Group is more likely to adopt Internet banking, whereas the Old Age Group is less likely to adopt Internet banking. These results are consistent with Flavián et al.'s(2006) findings. Younger customers adopt Internet banking due to a greater convenience, lower prices, and/or time savings. In order to encourage more young customers to adopt Internet banking, banks can offer price incentives. For example, banks can offer lower monthly fees to students as the Young Age Group may not have sufficient disposable incomes. Lower transaction costs for Internet banking may encourage students to use Internet banking.

Jaruwachirathanakul and Fink (2005) find that older customers have negative attitudes towards Internet banking as they do not fully understand the usefulness of Internet banking. Therefore, banks should develop effective promotion strategies to emphasize the advantages of their Internet banking services to older customers, such as convenience, savings of time and effort, lower costs, greater control over finances, and information availability.

6.7 Limitations and Avenues for Future Research

Although this study provides valuable contributions from a theoretical and practical perspective, there are a few limitations.

First, this research was conducted in Christchurch, New Zealand. People's beliefs and attitudes can be very across different regions and countries. A probability sample in a different geographic area may reveal differences in consumers' attitudes towards the adoption of Internet banking. Therefore, future researchers should use a more geographic dispense sample to analyse consumers' behavioural intentions towards Internet banking services. Future researchers can also undertake a comparative study between two different countries, such as New Zealand and Australia.

Secondly, this study empirically examined eight factors that may influence consumers' adoption of Internet banking. However, there may be some other factors that can impact on customers' adoption of Internet banking but were not identified in this study. Further research is required to identify other factors that may impact on customers' adoption of Internet banking. This approach may be particularly important in a different cultural setting.

Thirdly, this study focused on the customers' perspectives. Future research could focus on the banks' perspectives. Interviews with bank management could be conducted to discuss their strategies regarding the implementation of Internet banking.

6.8 Conclusion

This research illustrates a range of factors that affect bank customers' decision to adopt Internet banking using an exploratory investigation. This study also identifies some factors that are more influential than others. An understanding of these influencing factors can assist banks in developing more effective strategies to promote and encourage Internet banking adoption.

A User-friendly Website is identified as the most important factor influencing consumers to adopt Internet banking. Therefore, banks must consider a superior web system design in developing strategies for enhancing Internet banking adoption.

Marketing Communications is also an important factor that affects customers' adoption of Internet banking. Banks should develop effective promotional campaigns, such as advertising, personal selling, radio, and newspaper advertising to create a greater awareness of Internet banking and its benefits to potential Internet banking adopters.

In summary, the greater the knowledge that bank management has about the factors that influences customers to adopt Internet banking, the greater the ability banks have to develop appropriate strategies to encourage more customers to adopt Internet banking.

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Table 5.1: Descriptive Statistic of Demographic Characteristics

Variables	N		Total Respondents		Internet Banking Users		Non-Internet Banking Users	
			Frequency (No. of respondents per option	Percent	Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent
Gender	Valid	Male	183	47.0	117	47.4	66	46.5
		Female	204	52.4	128	51.8	76	53.5
		Total	387	99.5	245	99.2	142	100.0
	Missing	-999	2	0.5	2	0.8	0	0.0
	Total		389	100.0	247	100.0	142	100.0
Age	Valid	18-24	4	1.0	3	1.2	1	0.7
		25-30	17	4.4	14	5.7	3	2.1
		31-35	17	4.4	15	6.1	2	1.4
		36-40	27	6.9	24	9.7	3	2.1
		41-45	42	10.8	35	14.2	7	4.9
		46-50	54	13.9	38	15.4	16	11.3
		51-55	68	17.5	49	19.8	19	13.4
		56-60	39	10.0	32	13.0	7	4.9
		61-65	31	8.0	19	7.7	12	8.5
		66-70	37	9.5	12	4.9	25	17.6
		71-75	18	4.6	4	1.6	14	9.9
		76+	34	8.7	1	0.4	33	23.2
		Total	388	99.7	246	99.6	142	100.0
	Missing	-999	1	0.3	1	0.4	0	0.0
	Total		389	100.0	247	100.0	142	100.0
Marital Status	Valid	Single/Never Married	40	10.3	14	5.7	26	18.3
		Married	277	71.2	191	77.3	86	60.6
		De facto relationship	28	7.2	21	8.5	7	4.9
		Divorced/ Separated	43	11.1	20	8.1	23	16.2
		Total	388	99.7	246	99.6	142	100.0
	Missing	-999	1	0.3	1	0.4	0	0
	Total		389	100.0	247	100.0	142	100.0
Qualification	Valid	Primary Education	3	0.8	0	0.0	3	2.1
		Secondary Education	70	18.0	38	15.4	32	22.5
		Fifth Form Education	38	9.8	23	9.3	15	10.6
		Bursary	18	4.6	12	4.9	6	4.2
		Trade Qualification	41	10.5	18	7.3	23	16.2
		Diploma/ Certification	85	21.9	57	23.1	28	19.7
		Bachelor Degree	71	18.3	52	21.1	19	13.4
		Postgraduate Degree	46	11.8	40	16.2	6	4.2
		Other	17	4.4	7	2.8	10	7.0
	Total		389	100.0	247	100.0	142	100.0

Table 5.1: Descriptive Statistic of Demographic Characteristics (Continued)

Variables	N		Total Respondents		Internet Banking Users		Non-Internet Banking Users	
			Frequency (No. of respondents per option	Percent	Frequency (No. of respondents per option)	Percent	Frequency (No. of respondents per option)	Percent
Occupation	Valid	Professional	137	35.2	120	48.6	17	12.0
		Tradesperson	16	4.1	9	3.6	7	4.9
		Student	8	2.1	6	2.4	2	1.4
		Clerical	38	9.8	27	10.9	11	7.7
		Labourer	5	1.3	2	0.8	3	2.1
		Farmer	4	1.0	2	0.8	2	1.4
		Unemployed	22	5.7	14	5.7	8	5.6
		Retired	102	26.2	33	13.4	69	48.6
		Sale/Services	22	5.7	16	6.5	6	4.2
		Home maker	17	4.4	8	3.2	9	6.3
		Other	17	4.4	9	3.6	8	5.6
		Total	388	99.7	246	99.6	142	100.0
	Missing	-999	1	0.3	1	0.4	0	0.0
	Total		389	100.0	247	100.0	142	100.0
Income	Valid	Under $10,000	15	3.9	9	3.6	6	4.2
		$10,000-$19,999	49	12.6	19	7.7	30	21.1
		$20,000-$29,999	51	13.1	18	7.3	33	23.2
		$30,000-$39,999	48	12.3	27	10.9	21	14.8
		$40,000-$49,999	57	14.7	40	16.2	17	12.0
		$50,000-$59,999	35	9.0	22	8.9	13	9.2
		$60,000-$69,999	28	7.2	21	8.5	7	4.9
		$70,000-$79,999	31	8.0	26	10.5	5	3.5
		$80,000-$89,999	18	4.6	18	7.3	0	0.0
		$90,000-$99,999	9	2.3	6	2.4	3	2.1
		$100,000-$120,000	17	4.4	15	6.1	2	1.4
		$120,000+	23	5.9	20	8.1	3	2.1
		Total	381	97.9	241	97.6	140	98.6
	Missing	-999	8	2.1	6	2.4	2	1.4
	Total		389	100.0	247	100.0	142	100.0

Table 5.2: The Correlation Matrix for Internet Banking Adoption

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14
B1	1.00	0.78	0.21	0.74	0.77	0.64	0.60	0.61	0.66	0.72	0.62	0.43	0.53	0.58
B2	0.78	1.00	0.15	0.66	0.70	0.60	0.63	0.66	0.73	0.73	0.66	0.45	0.55	0.54
B3	0.21	0.15	1.00	0.31	0.31	0.33	0.11	0.14	0.13	0.17	0.13	0.15	0.08	0.21
B4	0.74	0.66	0.31	1.00	0.84	0.72	0.53	0.59	0.55	0.65	0.55	0.35	0.46	0.51
B5	0.77	0.70	0.31	0.84	1.00	0.73	0.57	0.65	0.60	0.67	0.61	0.39	0.47	0.54
B6	0.64	0.60	0.33	0.72	0.73	1.00	0.52	0.54	0.54	0.59	0.57	0.36	0.47	0.51
B7	0.60	0.63	0.11	0.53	0.57	0.52	1.00	0.77	0.80	0.76	0.77	0.60	0.65	0.56
B8	0.61	0.66	0.14	0.59	0.65	0.54	0.77	1.00	0.77	0.72	0.75	0.58	0.58	0.53
B9	0.66	0.73	0.13	0.55	0.60	0.54	0.80	0.77	1.00	0.87	0.85	0.66	0.69	0.64
B10	0.72	0.73	0.17	0.65	0.67	0.59	0.76	0.72	0.87	1.00	0.85	0.64	0.69	0.66
B11	0.62	0.66	0.13	0.55	0.61	0.57	0.77	0.75	0.85	0.85	1.00	0.71	0.67	0.63
B12	0.43	0.45	0.15	0.35	0.39	0.36	0.60	0.58	0.66	0.64	0.71	1.00	0.62	0.56
B13	0.53	0.55	0.08	0.46	0.47	0.47	0.65	0.58	0.69	0.69	0.67	0.62	1.00	0.66
B14	0.58	0.54	0.21	0.51	0.54	0.51	0.56	0.53	0.64	0.66	0.63	0.56	0.66	1.00
B15	0.54	0.57	0.16	0.47	0.54	0.46	0.42	0.46	0.46	0.53	0.48	0.30	0.39	0.46
B16	0.53	0.60	0.19	0.48	0.55	0.48	0.45	0.49	0.49	0.55	0.50	0.33	0.41	0.46
B17	0.50	0.56	0.20	0.50	0.54	0.49	0.40	0.47	0.45	0.49	0.47	0.33	0.37	0.42
B18	0.47	0.54	0.24	0.46	0.47	0.48	0.38	0.39	0.43	0.48	0.43	0.23	0.36	0.34
B19	0.35	0.41	0.22	0.34	0.37	0.39	0.32	0.32	0.33	0.39	0.37	0.19	0.32	0.30
B20	0.27	0.34	0.24	0.32	0.33	0.38	0.25	0.27	0.27	0.32	0.32	0.15	0.26	0.25
B21	0.50	0.56	0.23	0.53	0.56	0.56	0.43	0.47	0.49	0.54	0.51	0.31	0.41	0.44
B22	0.56	0.61	0.15	0.54	0.60	0.57	0.58	0.58	0.63	0.63	0.62	0.45	0.58	0.55
B23	0.10	0.08	0.25	0.22	0.19	0.24	0.15	0.19	0.16	0.19	0.21	0.11	0.12	0.18
B24	-0.24	-0.20	0.19	-0.17	-0.15	-0.11	-0.07	-0.10	-0.09	-0.15	-0.08	0.00	-0.03	-0.02
B25	-0.43	-0.46	0.08	-0.38	-0.38	-0.28	-0.33	-0.33	-0.37	-0.40	-0.34	-0.20	-0.26	-0.28
B26	0.06	0.14	0.11	0.03	0.10	0.13	0.08	0.14	0.14	0.10	0.15	0.15	0.12	0.16
B27	0.10	0.15	0.18	0.12	0.17	0.13	0.11	0.19	0.14	0.15	0.15	0.14	0.11	0.18
B28	-0.23	-0.24	0.23	-0.18	-0.20	-0.11	-0.17	-0.16	-0.18	-0.21	-0.17	-0.05	-0.13	-0.11
B29	0.08	0.09	0.16	0.12	0.15	0.24	0.17	0.15	0.16	0.16	0.22	0.17	0.18	0.16
B30	-0.08	-0.10	0.14	-0.01	0.02	0.08	-0.03	-0.01	-0.05	-0.04	0.06	0.03	0.03	0.02
B31	0.23	0.27	0.15	0.22	0.22	0.27	0.31	0.28	0.32	0.33	0.34	0.29	0.32	0.30
B32	-0.01	-0.08	0.17	0.04	0.00	0.06	0.01	0.04	-0.01	0.03	0.06	0.11	0.08	0.12
B33	0.19	0.26	0.00	0.12	0.20	0.18	0.30	0.27	0.32	0.29	0.32	0.28	0.31	0.29
B34	0.37	0.41	0.07	0.33	0.39	0.39	0.40	0.32	0.38	0.39	0.41	0.29	0.37	0.37
B35	0.23	0.30	0.23	0.29	0.32	0.34	0.28	0.26	0.26	0.28	0.30	0.17	0.28	0.24
B36	-0.09	-0.03	0.08	-0.05	-0.06	-0.05	-0.08	-0.03	-0.07	-0.11	-0.08	-0.06	-0.06	-0.08
B37	0.46	0.44	0.17	0.49	0.46	0.47	0.42	0.46	0.47	0.49	0.51	0.36	0.41	0.40
B38	0.13	0.17	0.20	0.18	0.23	0.25	0.30	0.28	0.28	0.26	0.33	0.30	0.27	0.21
B39	0.64	0.71	0.18	0.56	0.60	0.56	0.55	0.56	0.63	0.69	0.63	0.42	0.49	0.57
B40	0.50	0.49	0.15	0.43	0.48	0.47	0.44	0.50	0.48	0.50	0.50	0.38	0.38	0.50
B41	0.45	0.47	0.11	0.39	0.44	0.42	0.39	0.42	0.43	0.45	0.45	0.34	0.39	0.45

Correlation Matrix (Continued)

	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28
B1	0.54	0.53	0.50	0.47	0.35	0.27	0.50	0.56	0.10	-0.24	-0.43	0.06	0.10	-0.23
B2	0.57	0.60	0.56	0.54	0.41	0.34	0.56	0.61	0.08	-0.20	-0.46	0.14	0.15	-0.24
B3	0.16	0.19	0.20	0.24	0.22	0.24	0.23	0.15	0.25	0.19	0.08	0.11	0.18	0.23
B4	0.47	0.48	0.50	0.46	0.34	0.32	0.53	0.54	0.22	-0.17	-0.38	0.03	0.12	-0.18
B5	0.54	0.55	0.54	0.47	0.37	0.33	0.56	0.60	0.19	-0.15	-0.38	0.10	0.17	-0.20
B6	0.46	0.48	0.49	0.48	0.39	0.38	0.56	0.57	0.24	-0.11	-0.28	0.13	0.13	-0.11
B7	0.42	0.45	0.40	0.38	0.32	0.25	0.43	0.58	0.15	-0.07	-0.33	0.08	0.11	-0.17
B8	0.46	0.49	0.47	0.39	0.32	0.27	0.47	0.58	0.19	-0.10	-0.33	0.14	0.19	-0.16
B9	0.46	0.49	0.45	0.43	0.33	0.27	0.49	0.63	0.16	-0.09	-0.37	0.14	0.14	-0.18
B10	0.53	0.55	0.49	0.48	0.39	0.32	0.54	0.63	0.19	-0.15	-0.40	0.10	0.15	-0.21
B11	0.48	0.50	0.47	0.43	0.37	0.32	0.51	0.62	0.21	-0.08	-0.34	0.15	0.15	-0.17
B12	0.30	0.33	0.33	0.23	0.19	0.15	0.31	0.45	0.11	0.00	-0.20	0.15	0.14	-0.05
B13	0.39	0.41	0.37	0.36	0.32	0.26	0.41	0.58	0.12	-0.03	-0.26	0.12	0.11	-0.13
B14	0.46	0.46	0.42	0.34	0.30	0.25	0.44	0.55	0.18	-0.02	-0.28	0.16	0.18	-0.11
B15	1.00	0.93	0.75	0.58	0.51	0.46	0.61	0.59	0.18	-0.01	-0.28	0.11	0.22	-0.08
B16	0.93	1.00	0.76	0.61	0.53	0.48	0.60	0.63	0.15	-0.04	-0.30	0.12	0.23	-0.08
B17	0.75	0.76	1.00	0.60	0.50	0.48	0.60	0.63	0.20	-0.01	-0.25	0.11	0.20	-0.07
B18	0.58	0.61	0.60	1.00	0.85	0.78	0.76	0.63	0.27	0.03	-0.23	0.12	0.18	-0.10
B19	0.51	0.53	0.50	0.85	1.00	0.89	0.74	0.58	0.29	0.09	-0.15	0.10	0.15	-0.08
B20	0.46	0.48	0.48	0.78	0.89	1.00	0.74	0.53	0.32	0.14	-0.07	0.12	0.13	-0.05
B21	0.61	0.60	0.60	0.76	0.74	0.74	1.00	0.73	0.27	0.05	-0.24	0.15	0.19	-0.12
B22	0.59	0.63	0.63	0.63	0.58	0.53	0.73	1.00	0.28	0.00	-0.29	0.11	0.16	-0.17
B23	0.18	0.15	0.20	0.27	0.29	0.32	0.27	0.28	1.00	0.37	0.24	0.20	0.18	0.14
B24	-0.01	-0.04	-0.01	0.03	0.09	0.14	0.05	0.00	0.37	1.00	0.62	0.31	0.37	0.41
B25	-0.28	-0.30	-0.25	-0.23	-0.15	-0.07	-0.24	-0.29	0.24	0.62	1.00	0.22	0.16	0.40
B26	0.11	0.12	0.11	0.12	0.10	0.12	0.15	0.11	0.20	0.31	0.22	1.00	0.72	0.41
B27	0.22	0.23	0.20	0.18	0.15	0.13	0.19	0.16	0.18	0.37	0.16	0.72	1.00	0.60
B28	-0.08	-0.08	-0.07	-0.10	-0.08	-0.05	-0.12	-0.17	0.14	0.41	0.40	0.41	0.60	1.00
B29	0.04	0.08	0.09	0.19	0.19	0.18	0.16	0.16	0.22	0.16	0.15	0.14	0.15	0.11
B30	-0.02	0.02	0.02	0.06	0.10	0.12	0.02	0.03	0.23	0.20	0.28	0.06	0.09	0.16
B31	0.13	0.15	0.18	0.21	0.15	0.11	0.21	0.27	0.18	0.10	0.03	0.11	0.14	0.00
B32	-0.04	-0.02	0.02	0.02	0.06	0.08	0.03	0.03	0.31	0.23	0.28	0.17	0.17	0.21
B33	0.16	0.19	0.14	0.16	0.12	0.08	0.16	0.24	0.09	0.06	0.00	0.16	0.12	0.04
B34	0.29	0.30	0.31	0.31	0.27	0.27	0.36	0.42	0.21	0.08	-0.10	0.19	0.13	-0.02
B35	0.25	0.26	0.24	0.31	0.26	0.26	0.32	0.33	0.24	0.12	-0.05	0.21	0.19	-0.03
B36	0.03	0.03	-0.02	0.01	0.07	0.09	0.04	-0.05	0.13	0.27	0.21	0.23	0.30	0.24
B37	0.40	0.40	0.43	0.48	0.43	0.43	0.56	0.52	0.23	0.02	-0.26	0.14	0.18	-0.06
B38	0.14	0.18	0.17	0.25	0.26	0.27	0.34	0.32	0.28	0.20	0.04	0.12	0.14	0.08
B39	0.55	0.56	0.48	0.48	0.40	0.33	0.56	0.52	0.22	-0.06	-0.35	0.19	0.21	-0.12
B40	0.41	0.43	0.36	0.34	0.30	0.28	0.40	0.42	0.20	-0.01	-0.25	0.15	0.22	-0.04
B41	0.42	0.42	0.35	0.34	0.28	0.27	0.40	0.42	0.18	-0.02	-0.22	0.16	0.24	0.00

Correlation Matrix (Continued)

	B29	B30	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41
B1	0.08	-0.08	0.23	-0.01	0.19	0.37	0.23	-0.09	0.46	0.13	0.64	0.50	0.45
B2	0.09	-0.10	0.27	-0.08	0.26	0.41	0.30	-0.03	0.44	0.17	0.71	0.49	0.47
B3	0.16	0.14	0.15	0.17	0.00	0.07	0.23	0.08	0.17	0.20	0.18	0.15	0.11
B4	0.12	-0.01	0.22	0.04	0.12	0.33	0.29	-0.05	0.49	0.18	0.56	0.43	0.39
B5	0.15	0.02	0.22	0.00	0.20	0.39	0.32	-0.06	0.46	0.23	0.60	0.48	0.44
B6	0.24	0.08	0.27	0.06	0.18	0.39	0.34	-0.05	0.47	0.25	0.56	0.47	0.42
B7	0.17	-0.03	0.31	0.01	0.30	0.40	0.28	-0.08	0.42	0.30	0.55	0.44	0.39
B8	0.15	-0.01	0.28	0.04	0.27	0.32	0.26	-0.03	0.46	0.28	0.56	0.50	0.42
B9	0.16	-0.05	0.32	-0.01	0.32	0.38	0.26	-0.07	0.47	0.28	0.63	0.48	0.43
B10	0.16	-0.04	0.33	0.03	0.29	0.39	0.28	-0.11	0.49	0.26	0.69	0.50	0.45
B11	0.22	0.06	0.34	0.06	0.32	0.41	0.30	-0.08	0.51	0.33	0.63	0.50	0.45
B12	0.17	0.03	0.29	0.11	0.28	0.29	0.17	-0.06	0.36	0.30	0.42	0.38	0.34
B13	0.18	0.03	0.32	0.08	0.31	0.37	0.28	-0.06	0.41	0.27	0.49	0.38	0.39
B14	0.16	0.02	0.30	0.12	0.29	0.37	0.24	-0.08	0.40	0.21	0.57	0.50	0.45
B15	0.04	-0.02	0.13	-0.04	0.16	0.29	0.25	0.03	0.40	0.14	0.55	0.41	0.42
B16	0.08	0.02	0.15	-0.02	0.19	0.30	0.26	0.03	0.40	0.18	0.56	0.43	0.42
B17	0.09	0.02	0.18	0.02	0.14	0.31	0.24	-0.02	0.43	0.17	0.48	0.36	0.35
B18	0.19	0.06	0.21	0.02	0.16	0.31	0.31	0.01	0.48	0.25	0.48	0.34	0.34
B19	0.19	0.10	0.15	0.06	0.12	0.27	0.26	0.07	0.43	0.26	0.40	0.30	0.28
B20	0.18	0.12	0.11	0.08	0.08	0.27	0.26	0.09	0.43	0.27	0.33	0.28	0.27
B21	0.16	0.02	0.21	0.03	0.16	0.36	0.32	0.04	0.56	0.34	0.56	0.40	0.40
B22	0.16	0.03	0.27	0.03	0.24	0.42	0.33	-0.05	0.52	0.32	0.52	0.42	0.42
B23	0.22	0.23	0.18	0.31	0.09	0.21	0.24	0.13	0.23	0.28	0.22	0.20	0.18
B24	0.16	0.20	0.10	0.23	0.06	0.08	0.12	0.27	0.02	0.20	-0.06	-0.01	-0.02
B25	0.15	0.28	0.03	0.28	0.00	-0.10	-0.05	0.21	-0.26	0.04	-0.35	-0.25	-0.22
B26	0.14	0.06	0.11	0.17	0.16	0.19	0.21	0.23	0.14	0.12	0.19	0.15	0.16
B27	0.15	0.09	0.14	0.17	0.12	0.13	0.19	0.30	0.18	0.14	0.21	0.22	0.24
B28	0.11	0.16	0.00	0.21	0.04	-0.02	-0.03	0.24	-0.06	0.08	-0.12	-0.04	0.00
B29	1.00	0.69	0.61	0.49	0.39	0.31	0.19	-0.01	0.23	0.22	0.11	0.12	0.14
B30	0.69	1.00	0.58	0.57	0.33	0.25	0.21	0.09	0.07	0.15	-0.01	0.02	0.05
B31	0.61	0.58	1.00	0.50	0.49	0.41	0.27	-0.05	0.27	0.22	0.30	0.21	0.21
B32	0.49	0.57	0.50	1.00	0.30	0.26	0.11	0.15	0.12	0.17	0.03	0.08	0.07
B33	0.39	0.33	0.49	0.30	1.00	0.51	0.16	0.01	0.22	0.18	0.28	0.19	0.20
B34	0.31	0.25	0.41	0.26	0.51	1.00	0.36	0.00	0.40	0.29	0.44	0.34	0.34
B35	0.19	0.21	0.27	0.11	0.16	0.36	1.00	0.18	0.36	0.25	0.35	0.29	0.27
B36	-0.01	0.09	-0.05	0.15	0.01	0.00	0.18	1.00	-0.04	0.11	0.04	0.00	0.04
B37	0.23	0.07	0.27	0.12	0.22	0.40	0.36	-0.04	1.00	0.36	0.51	0.39	0.39
B38	0.22	0.15	0.22	0.17	0.18	0.29	0.25	0.11	0.36	1.00	0.26	0.28	0.30
B39	0.11	-0.01	0.30	0.03	0.28	0.44	0.35	0.04	0.51	0.26	1.00	0.67	0.63
B40	0.12	0.02	0.21	0.08	0.19	0.34	0.29	0.00	0.39	0.28	0.67	1.00	0.86
B41	0.14	0.05	0.21	0.07	0.20	0.34	0.27	0.04	0.39	0.30	0.63	0.86	1.00

Table 5.3: Anti-Image Correlation

	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14
B1	.959[a]	-.353	-.049	-.118	-.240	-.027	-.074	.071	-.009	-.081	.020	.009	-.021	-.072
B2	-.353	.960[a]	.017	-.068	-.019	.010	.051	-.101	-.187	.021	.018	.008	-.018	.081
B3	-.049	.017	.833[a]	-.047	-.137	-.129	.025	.039	-.030	-.004	.094	-.123	.117	-.110
B4	-.118	-.068	-.047	.938[a]	-.485	-.210	-.011	-.058	.137	-.179	.068	.035	-.078	-.028
B5	-.240	-.019	-.137	-.485	.941[a]	-.196	.036	-.175	.016	-.005	-.035	.039	.106	-.026
B6	-.027	.010	-.129	-.210	-.196	.971[a]	-.042	.054	-.002	.063	-.092	.058	-.073	-.031
B7	-.074	.051	.025	-.011	.036	-.042	.964[a]	-.362	-.150	-.074	-.136	.004	-.104	.011
B8	.071	-.101	.039	-.058	-.175	.054	-.362	.955[a]	-.216	.107	-.110	-.078	-.010	.096
B9	-.009	-.187	-.030	.137	.016	-.002	-.150	-.216	.954[a]	-.420	-.211	-.020	-.053	-.104
B10	-.081	.021	-.004	-.179	-.005	.063	-.074	.107	-.420	.952[a]	-.289	-.060	-.116	-.014
B11	.020	.018	.094	.068	-.035	-.092	-.136	-.110	-.211	-.289	.966[a]	-.312	.011	.010
B12	.009	.008	-.123	.035	.039	.058	.004	-.078	-.020	-.060	-.312	.957[a]	-.188	-.125
B13	-.021	-.018	.117	-.078	.106	-.073	-.104	-.010	-.053	-.116	.011	-.188	.958[a]	-.302
B14	-.072	.081	-.110	-.028	-.026	-.031	.011	.096	-.104	-.014	.010	-.125	-.302	.968[a]
B15	-.156	.088	.098	.083	-.055	.000	.040	.018	-.015	-.002	-.014	.071	-.024	-.074
B16	.124	-.124	-.099	-.015	.015	.015	-.061	-.026	.075	-.071	.019	-.044	.023	.030
B17	.057	-.074	-.010	-.043	-.031	-.031	.054	-.062	-.004	.072	-.024	-.079	.054	-.020
B18	-.079	-.077	-.027	-.105	.115	-.034	.038	.026	-.090	.006	.054	.050	-.008	.106
B19	-.008	.004	-.022	.148	-.073	.059	-.069	.015	.070	-.020	.013	-.014	-.051	-.021
B20	.069	-.017	-.039	-.058	.060	-.036	.030	.008	.022	-.009	-.071	.046	.003	-.003
B21	.049	.005	.008	-.047	-.042	-.073	.055	-.031	.018	-.038	.007	.008	.095	-.031
B22	-.039	-.016	.088	.055	-.058	-.069	-.029	-.003	-.102	.048	-.016	-.007	-.155	-.052
B23	.051	.076	-.044	-.130	.046	-.026	.021	-.075	.019	-.074	-.054	.080	.118	-.030
B24	.116	.007	-.099	.010	-.021	.120	-.098	.104	-.077	.146	-.015	-.034	-.069	-.042
B25	-.069	.095	-.016	.056	.025	-.067	.044	-.050	.038	-.069	.056	-.001	.004	.072
B26	-.001	-.095	.026	.132	-.017	-.078	.082	-.002	-.076	.127	-.053	-.060	-.049	-.030
B27	.039	.007	.087	-.030	-.110	.079	.009	-.089	.107	-.141	.019	.047	.073	-.052
B28	-.019	.070	-.250	-.030	.153	-.060	-.027	.063	-.065	.064	.019	-.038	-.032	.068
B29	.038	-.026	-.009	.050	-.021	-.145	-.055	.030	-.030	-.038	.012	.003	.023	-.002
B30	-.005	.120	.025	.014	-.102	.021	.118	-.021	.036	.113	-.148	.031	-.017	.039
B31	.021	-.127	-.082	-.041	.145	-.010	-.060	.011	-.041	-.030	.037	-.013	-.009	-.013
B32	-.083	.083	-.041	-.060	.069	.061	.051	-.066	.112	-.096	.049	-.050	-.025	-.084
B33	.056	-.026	.072	.103	-.102	.064	.003	-.041	-.049	.021	-.004	-.013	-.040	-.054
B34	-.028	-.077	.133	.014	-.061	-.055	-.119	.121	.034	.016	.004	.019	.022	-.023
B35	.132	-.070	-.150	.027	-.069	-.021	-.088	.050	.071	-.016	-.019	.071	-.107	.032
B36	-.018	-.058	.004	-.061	.080	-.009	.028	-.043	-.087	.116	.021	-.005	-.006	.077
B37	-.114	.143	.033	-.152	.100	.005	.081	-.085	-.027	.056	-.074	-.038	-.006	.042
B38	.100	.032	-.084	.076	-.087	-.004	-.066	.002	-.018	.021	-.031	-.080	-.044	.062
B39	-.012	-.230	-.024	.016	.018	-.039	.013	.059	.038	-.208	-.038	.080	.030	-.062
B40	-.101	.095	-.010	.015	.044	-.089	.034	-.181	-.022	.053	-.033	-.030	.123	-.116
B41	.044	-.070	.066	.018	-.056	.045	-.007	.114	.027	.013	.022	-.012	-.109	.026

Anti-Image Correlation (Continued)

	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28
B1	-.156	.124	.057	-.079	-.008	.069	.049	-.039	.051	.116	-.069	-.001	.039	-.019
B2	.088	-.124	-.074	-.077	.004	-.017	.005	-.016	.076	.007	.095	-.095	.007	.070
B3	.098	-.099	-.010	-.027	-.022	-.039	.008	.088	-.044	-.099	-.016	.026	.087	-.250
B4	.083	-.015	-.043	-.105	.148	-.058	-.047	.055	-.130	.010	.056	.132	-.030	-.030
B5	-.055	.015	-.031	.115	-.073	.060	-.042	-.058	.046	-.021	.025	-.017	-.110	.153
B6	.000	.015	-.031	-.034	.059	-.036	-.073	-.069	-.026	.120	-.067	-.078	.079	-.060
B7	.040	-.061	.054	.038	-.069	.030	.055	-.029	.021	-.098	.044	.082	.009	-.027
B8	.018	-.026	-.062	.026	.015	.008	-.031	-.003	-.075	.104	-.050	-.002	-.089	.063
B9	-.015	.075	-.004	-.090	.070	.022	.018	-.102	.019	-.077	.038	-.076	.107	-.065
B10	-.002	-.071	.072	.006	-.020	-.009	-.038	.048	-.074	.146	-.069	.127	-.141	.064
B11	-.014	.019	-.024	.054	.013	-.071	.007	-.016	-.054	-.015	.056	-.053	.019	.019
B12	.071	-.044	-.079	.050	-.014	.046	.008	-.007	.080	-.034	-.001	-.060	.047	-.038
B13	-.024	.023	.054	-.008	-.051	.003	.095	-.155	.118	-.069	.004	-.049	.073	-.032
B14	-.074	.030	-.020	.106	-.021	-.003	-.031	-.052	-.030	-.042	.072	-.030	-.052	.068
B15	.885[a]	-.818	-.184	.055	-.080	.114	-.191	.147	-.117	-.093	.004	.002	.040	-.024
B16	-.818	.891[a]	-.131	-.095	.064	-.108	.155	-.186	.137	.067	.022	.022	-.071	.016
B17	-.184	-.131	.974[a]	-.155	.100	-.055	-.003	-.156	-.013	.015	-.029	.059	-.048	-.014
B18	.055	-.095	-.155	.945[a]	-.477	-.040	-.154	.036	-.045	-.017	.045	-.026	-.012	-.010
B19	-.080	.064	.100	-.477	.879[a]	-.641	.007	-.124	-.005	.025	.025	.100	-.103	.063
B20	.114	-.108	-.055	-.040	-.641	.881[a]	-.306	.101	-.059	-.040	-.054	-.091	.128	-.028
B21	-.191	.155	-.003	-.154	.007	-.306	.951[a]	-.353	.101	-.032	.014	-.030	-.012	.039
B22	.147	-.186	-.156	.036	-.124	.101	-.353	.957[a]	-.169	-.035	.025	.043	-.021	.035
B23	-.117	.137	-.013	-.045	-.005	-.059	.101	-.169	.874[a]	-.186	-.100	-.090	.099	-.035
B24	-.093	.067	.015	-.017	.025	-.040	-.032	-.035	-.186	.746[a]	-.513	.084	-.205	-.013
B25	.004	.022	-.029	.045	.025	-.054	.014	.025	-.100	-.513	.883[a]	-.168	.125	-.108
B26	.002	.022	.059	-.026	.100	-.091	-.030	.043	-.090	.084	-.168	.722[a]	-.618	.085
B27	.040	-.071	-.048	-.012	-.103	.128	-.012	-.021	.099	-.205	.125	-.618	.691[a]	-.532
B28	-.024	.016	-.014	-.010	.063	-.028	.039	.035	-.035	-.013	-.108	.085	-.532	.760[a]
B29	.076	-.035	.032	-.038	-.055	.047	-.044	.066	-.015	-.019	-.004	-.045	-.020	.009
B30	.024	-.090	.005	.057	-.039	-.073	.099	-.006	-.026	.051	-.092	.083	.047	-.086
B31	-.051	.105	-.016	-.085	.064	.081	-.050	-.049	.058	-.028	-.014	.089	-.144	.152
B32	.061	-.031	-.057	.073	-.041	.003	-.007	.049	-.171	.030	-.056	-.077	.041	-.049
B33	.010	-.052	.073	-.062	.020	.033	.021	-.003	.048	.029	-.049	-.038	.056	-.069
B34	-.029	.063	-.059	.022	.037	-.072	.031	-.084	.013	-.061	.038	-.085	.095	-.070
B35	-.019	.023	.038	-.097	.071	-.004	.032	-.060	-.054	-.003	.000	-.099	-.014	.112
B36	-.013	-.022	.050	.101	-.052	-.033	-.052	.077	-.010	-.076	-.026	.051	-.184	.026
B37	-.061	.084	-.055	-.012	.023	-.087	-.076	-.042	.032	-.070	.150	.015	-.047	-.014
B38	.121	-.097	.059	.007	-.015	.037	-.140	-.009	-.100	-.037	-.037	.026	.047	-.045
B39	.034	-.080	.007	.034	-.125	.180	-.160	.163	-.098	-.057	.067	-.093	.068	-.008
B40	.062	-.068	.035	.052	-.035	-.046	.048	.059	-.011	-.092	.076	.042	-.041	.041
B41	-.096	.077	.006	-.066	.105	-.047	.005	-.087	.004	.107	-.062	.034	-.046	-.057

Anti-Image Correlation (Continued)

	B29	B30	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41
B1	.038	-.005	.021	-.083	.056	-.028	.132	-.018	-.114	.100	-.012	-.101	.044
B2	-.026	.120	-.127	.083	-.026	-.077	-.070	-.058	.143	.032	-.230	.095	-.070
B3	-.009	.025	-.082	-.041	.072	.133	-.150	.004	.033	-.084	-.024	-.010	.066
B4	.050	.014	-.041	-.060	.103	.014	.027	-.061	-.152	.076	.016	.015	.018
B5	-.021	-.102	.145	.069	-.102	-.061	-.069	.080	.100	-.087	.018	.044	-.056
B6	-.145	.021	-.010	.061	.064	-.055	-.021	-.009	.005	-.004	-.039	-.089	.045
B7	-.055	.118	-.060	.051	.003	-.119	-.088	.028	.081	-.066	.013	.034	-.007
B8	.030	-.021	.011	-.066	-.041	.121	.050	-.043	-.085	.002	.059	-.181	.114
B9	-.030	.036	-.041	.112	-.049	.034	.071	-.087	-.027	-.018	.038	-.022	.027
B10	-.038	.113	-.030	-.096	.021	.016	-.016	.116	.056	.021	-.208	.053	.013
B11	.012	-.148	.037	.049	-.004	.004	-.019	.021	-.074	-.031	-.038	-.033	.022
B12	.003	.031	-.013	-.050	-.013	.019	.071	-.005	-.038	-.080	.080	-.030	-.012
B13	.023	-.017	-.009	-.025	-.040	.022	-.107	-.006	-.006	-.044	.030	.123	-.109
B14	-.002	.039	-.013	-.084	-.054	-.023	.032	.077	.042	.062	-.062	-.116	.026
B15	.076	.024	-.051	.061	.010	-.029	-.019	-.013	-.061	.121	.034	.062	-.096
B16	-.035	-.090	.105	-.031	-.052	.063	.023	-.022	.084	-.097	-.080	-.068	.077
B17	.032	.005	-.016	-.057	.073	-.059	.038	.050	-.055	.059	.007	.035	.006
B18	-.038	.057	-.085	.073	-.062	.022	-.097	.101	-.012	.007	.034	.052	-.066
B19	-.055	-.039	.064	-.041	.020	.037	.071	-.052	.023	-.015	-.125	-.035	.105
B20	.047	-.073	.081	.003	.033	-.072	-.004	-.033	-.087	.037	.180	-.046	-.047
B21	-.044	.099	-.050	-.007	.021	.031	.032	-.052	-.076	-.140	-.160	.048	.005
B22	.066	-.006	-.049	.049	-.003	-.084	-.060	.077	-.042	-.009	.163	.059	-.087
B23	-.015	-.026	.058	-.171	.048	.013	-.054	-.010	.032	-.100	-.098	-.011	.004
B24	-.019	.051	-.028	.030	.029	-.061	-.003	-.076	-.070	-.037	-.057	-.092	.107
B25	-.004	-.092	-.014	-.056	-.049	.038	.000	-.026	.150	-.037	.067	.076	-.062
B26	-.045	.083	.089	-.077	-.038	-.085	-.099	.051	.015	.026	-.093	.042	.034
B27	-.020	.047	-.144	.041	.056	.095	-.014	-.184	-.047	.047	.068	-.041	-.046
B28	.009	-.086	.152	-.049	-.069	-.070	.112	.026	-.014	-.045	-.008	.041	-.057
B29	.865[a]	-.447	-.192	-.084	-.092	.008	.069	.068	-.118	-.001	.119	.016	-.047
B30	-.447	.763[a]	-.328	-.199	-.019	-.041	-.152	-.052	.085	.016	-.033	.047	-.035
B31	-.192	-.328	.884[a]	-.227	-.194	-.022	-.058	.146	.005	-.029	-.090	-.003	.037
B32	-.084	-.199	-.227	.839[a]	-.035	-.110	.087	-.149	-.055	-.008	.078	-.061	.026
B33	-.092	-.019	-.194	-.035	.904[a]	-.327	.079	-.051	-.013	.020	-.044	.042	-.020
B34	.008	-.041	-.022	-.110	-.327	.937[a]	-.145	.037	-.069	-.093	-.092	-.025	.019
B35	.069	-.152	-.058	.087	.079	-.145	.908[a]	-.185	-.162	-.006	-.013	-.089	.043
B36	.068	-.052	.146	-.149	-.051	.037	-.185	.672[a]	.111	-.090	-.112	.091	-.051
B37	-.118	.085	.005	-.055	-.013	-.069	-.162	.111	.953[a]	-.172	-.152	.071	-.049
B38	-.001	.016	-.029	-.008	.020	-.093	-.006	-.090	-.172	.928[a]	.038	-.003	-.099
B39	.119	-.033	-.090	.078	-.044	-.092	-.013	-.112	-.152	.038	.956[a]	-.212	-.094
B40	.016	.047	-.003	-.061	.042	-.025	-.089	.091	.071	-.003	-.212	.882[a]	-.758
B41	-.047	-.035	.037	.026	-.020	.019	.043	-.051	-.049	-.099	-.094	-.758	.881[a]

Table 5.4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi-Square	12587.048
	df	820
	Sig.	.000

Table 5.5: Factor Extraction

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	14.813	36.128	36.128	14.813	36.128	36.128
2	4.182	10.200	46.328	4.182	10.200	46.328
3	2.858	6.970	53.297	2.858	6.970	53.297
4	2.176	5.308	58.606	2.176	5.308	58.606
5	1.437	3.505	62.111	1.437	3.505	62.111
6	1.339	3.266	65.377	1.339	3.266	65.377
7	1.269	3.095	68.472	1.269	3.095	68.472
8	1.029	2.510	70.982	1.029	2.510	70.982
9	.943	2.301	73.282			
10	.839	2.046	75.328			
11	.793	1.935	77.263			
12	.734	1.790	79.054			
13	.712	1.736	80.790			
14	.639	1.558	82.348			
15	.568	1.384	83.732			
16	.531	1.295	85.027			
17	.504	1.230	86.256			
18	.454	1.108	87.364			
19	.437	1.067	88.431			
20	.410	1.000	89.432			
21	.378	.922	90.354			
22	.362	.882	91.236			
23	.325	.793	92.029			
24	.311	.758	92.787			
25	.292	.712	93.499			
26	.274	.669	94.168			
27	.271	.661	94.829			
28	.248	.604	95.433			
29	.234	.570	96.002			
30	.220	.537	96.540			
31	.194	.474	97.014			
32	.181	.441	97.455			
33	.163	.398	97.853			
34	.163	.397	98.250			
35	.146	.356	98.606			
36	.130	.317	98.923			
37	.121	.295	99.219			
38	.105	.255	99.474			
39	.084	.205	99.679			
40	.079	.192	99.870			
41	.053	.130	100.000			

Table 5.6: VARIMAX Rotated Component Matrix

	Component							
	1	2	3	4	5	6	7	8
B9	.888							
B11	.856							
B7	.836							
B10	.836							
B12	.803							
B8	.779							
B13	.778							
B14	.677							
B2	.632							
B1	.598							
B37								
B19		.862						
B20		.843						
B18		.842						
B21		.770						
B16		.707						
B15		.704						
B17		.682						
B22	.554	.604						
B30			.845					
B29			.806					
B31			.788					
B32			.707					
B33			.598					
B34								
B27				.872				
B26				.802				
B28				.704				
B36								
B41					.855			
B40					.835			
B39	.517				.519			
B3						.684		
B4						.635		
B5	.536					.568		
B6						.544		
B24							.631	
B23							.567	
B25							.552	
B38								
B35								.590

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 10 iterations

Table 5.7: Pattern Matrix with OBLIMIN Rotation

	Component							
	1	2	3	4	5	6	7	8
B12	.844							
B9	.797							
B7	.766							
B11	.752							
B13	.734							
B10	.676							
B8	.649							
B14	.522							
B30		.864						
B29		.811						
B31		.790						
B32		.703						
B33		.592						
B34								
B19			.900					
B20			.887					
B18			.835					
B21			.724					
B16			.636					
B15			.634					
B17			.619					
B22			.534					
B27				.880				
B26				.819				
B28				.676				
B36								
B3					.712			
B4					.708			
B5					.632			
B6					.591			
B1								
B24						.604		
B23						.574		
B25						.548		
B38								
B2								
B41							-.998	
B40							-.971	
B39							-.561	
B35								-.563
B37								

Extraction Method: Principal Component Analysis
Rotation Method: Oblimin with Kaiser Normalization
a. Rotation converged in 42 iterations.

Table 5.8: Questionnaire Items with Orthogonal (VARIMAX) Rotation

	Item Name	Component							
		1	2	3	4	5	6	7	8
B9	Clear screen of the website	.888							
B11	Navigation of the website	.856							
B7	Transaction speed of the website	.836							
B10	Information displayed on the website	.836							
B12	Search functions of the website	.803							
B8	Length of waiting time of the website	.779							
B13	Information displayed on the website	.778							
B14	Website update	.677							
B2	7 days and 24 hours services	.632							
B1	Time saving	.598							
B37	Time of Learning Internet banking								
B19	Internet skills		.862						
B20	Knowledge about the Internet techniques		.843						
B18	Computer skills		.842						
B21	Learning how to use Internet		.770						
B16	Accessibility to Computer		.707						
B15	Accessibility to Internet		.704						
B17	Accessibility to Internet and a bank		.682						
B22	Ease of use to Internet	.554	.604						
B30	Personal information on the Internet banking			.845					
B29	Confidence of security aspects			.806					
B31	Trustiness of security technology			.788					
B32	Security of Internet banking and traditional banking			.707					
B33	Confidence of bank recovery			.598					
B34	Risk of transactions								
B27	Friends/family/colleagues recommendations				.872				
B26	Word-of -mouth				.802				
B28	Friends/family influence				.704				
B36	Friends/Family influence								
B41	Price of transactions of Internet banking					.855			
B40	Services fees of Internet banking					.835			
B39	Set-up fees of Internet banking	.517				.519			
B3	Queuing time of In-branch banking						.684		
B4	Easiness of doing the banking						.635		
B5	Speed of completing banking activities	.536					.568		
B6	Convenience of Internet banking						.544		
B24	Bank promotions							.631	
B23	Bank staff promotions and advertising							.567	
B25	Bank staff promotions							.552	
B38	Time of fixing payment errors								
B35	Self image consistency								.590

Table 5.9: The Reliability Test for the Measures of Internet Banking Adoption

Constructs	Items	Cronbach's Alpha
User-friendly Website	1. Internet banking is convenient, in terms of time saving. 2. Internet banking is convenient, in terms of 7 days and 24 hours services. 7. The bank's website enables me to move back and forth quickly between sections of the website. 8. The transition of the bank's website has short waiting time. 9. The bank website has a clear and easy guidance screen. 10. Information displayed on the bank's website is clear, well organized, and easy to read. 11. The positioning of information on the bank's website allows me to navigate effortlessly through the site. 12. The search function within the bank website enables me to find the information I need. 13. The website offers me enough information to answer my questions. 14. The bank website is updated regularly.	**0.95**
Internet Access/ Internet Familiarity	15. I can easily get access to the computer. 16. I can easily get access to the Internet. 17. Using the Internet is more accessible to me than visiting a bank. 18. I have adequate computer skills. 19. I am very skilled at using the Internet. 20. I consider myself knowledgeable about using good search techniques on the Internet. 21. Learning how to use Internet banking is easy for me. 22. I find it easy to get Internet banking to do what I want to do.	**0.935**
Perceived Risks	29. I am confident with the security aspects of Internet banking. 30. I feel safe providing personal information about my banking through the Internet banking. 31. I trust that my bank provides security protection (technology) to prevent unauthorized intrusion. 32. Internet banking is just as secure as traditional banking. 33. In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money.	**0.824**

Table 5.9: The Reliability Test for the Measures of Internet Banking Adoption (Continued)

Constructs	Items	Cronbach's Alpha
Word-of-Mouth	26. I use Internet banking because of positive word-of-mouth. 27. I use Internet banking because of my friends/family/ colleagues recommendations. 28. My decision to adopt Internet banking was influenced by my friends/family/colleagues.	**0.800**
Price	40. Internet banking offers lower services fees. 41. The transactions in Internet banking are at a lower price, or at no cost.	**0.927**
Convenience	3. In-branch banking involves too much queuing time. 4. Internet banking makes it easier for me to do my banking. 5. Using Internet banking services enables me to complete banking activities more quickly. 6. Internet banking is a convenient way to manage my finances.	**0.824**
Marketing Communications	23. I am interested in the Internet banking services that banks promote. 24. I use Internet banking because of bank promotions, such as bank staff promotions and advertising. 25. My decision to adopt Internet banking was influenced by bank staff promotions.	**0.682**
Self Image	35. I feel Internet banking is consistent with my self-image.	**N/A**

Table 5.10: Person Correlation Matrix

		User-friendly Website	Internet Access/ Internet Familiarity	Perceived Risk	Word-of-Mouth	Price	Marketing Communications	Convenience	Self Image
User-friendly Website	Pearson Correlation	1	.626**	.227**	.033	.558**	.690**	-.194**	.313**
	Sig. (2-tailed)		.000	.000	.517	.000	.000	.000	.000
	N	389	389	389	389	389	389	389	389
Internet Access/ Internet Familiarity	Pearson Correlation	.626**	1	.163**	.090	.454**	.603**	-.012	.334**
	Sig. (2-tailed)	.000		.001	.075	.000	.000	.817	.000
	N	389	389	389	389	389	389	389	389
Perceived Risks	Pearson Correlation	.227**	.163**	1	.190**	.175**	.198**	.275**	.243**
	Sig. (2-tailed)	.000	.001		.000	.001	.000	.000	.000
	N	389	389	389	389	389	389	389	389
Word-of-Mouth	Pearson Correlation	.033	.090	.190**	1	.142**	.079	.411**	.140**
	Sig. (2-tailed)	.517	.075	.000		.005	.121	.000	.006
	N	389	389	389	389	389	389	389	389
Price	Pearson Correlation	.558**	.454**	.175**	.142**	1	.462**	-.051	.291**
	Sig. (2-tailed)	.000	.000	.001	.005		.000	.317	.000
	N	389	389	389	389	389	389	389	389
Convenience	Pearson Correlation	.690**	.603**	.198**	.079	.462**	1	-.073	.363**
	Sig. (2-tailed)	.000	.000	.000	.121	.000		.151	.000
	N	389	389	389	389	389	389	389	389
Marketing Communications	Pearson Correlation	-.194**	-.012	.275**	.411**	-.051	-.073	1	.114*
	Sig. (2-tailed)	.000	.817	.000	.000	.317	.151		.024
	N	389	389	389	389	389	389	389	389
Self Image	Pearson Correlation	.313**	.334**	.243**	.140**	.291**	.363**	.114*	1
	Sig. (2-tailed)	.000	.000	.000	.006	.000	.000	.024	
	N	389	389	389	389	389	389	389	389

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Table 5.11: Logistic Regression Results for Influencing Factors and Demographic Characteristics on Internet Banking Adoption

Number of Observations:	389			
Log Likelihood function:	-34.57322			
Restricted log likelihood:	-255.28600			
Chi-Squared Statistics:	441.42557			
Degrees of Freedom:	15			
Prob [ChiSqd > value]:	0.00000			
McFadden R-squared:	0.86457			
	Coefficients	Std Error	Sig.	Marginal Effects
User-friendly Website	4.34348	0.85407	0.0000***	0.19566
Internet Access/ Internet Familiarity	0.67361	0.34057	0.0479**	0.03034
Perceived Risks	-2.29629	0.53547	0.0000***	-0.10344
Word-of-Mouth	-0.21918	0.30829	0.4771	-0.00987
Price	0.74892	0.33167	0.0239**	0.03374
Convenience	0.43593	0.45949	0.3428	0.01964
Marketing Communications	-3.11289	0.64757	0.0000***	0.14023
Self Image	-0.08686	0.23215	0.7083	-0.00391
Gender	-1.52859	0.75625	0.0519*	-0.06886
Young Age	1.19739	0.58619	0.0411**	0.05394
Old Age	-1.20401	0.58475	0.0395**	-0.05424
Married	-0.25555	0.83738	0.7602	-0.01151
Low Qualification	-1.85254	0.84043	0.0275**	-0.11219
Professional	-0.53831	0.60442	0.3731	-0.02425
Low Income	-1.58290	0.55213	0.0041***	-0.07131
High Income	1.41504	0.54473	0.0094***	0.06374

Note: ***, **, * ==> Significance at 1%, 5%, 10% level

Table 5.16: T-test Results Relating to Gender

Factor	Age	No. of Respondents	Mean	T	Sig.
Perceived Risks	Male	183	5.367	-1.675	0.095*
	Female	204	5.541		
Price	Male	183	4.655	-2.334	0.020**
	Female	204	4.991		

** Significance at 0.05 level
* Significance at 0.1 level

Table 5.17: ANOVA (F-tests) Results Relating to Age

Factor	Age	No. of Respondents	Mean	F	Sig.
User-friendly Website	Young	38	5.497	5.614	0.004***
	Middle	123	5.504		
	Old	227	5.110		
Perceived Risks	Young	38	5.300	2.698	0.069*
	Middle	123	5.317		
	Old	227	5.556		
Word-of-Mouth	Young	38	3.377	3.943	0.020**
	Middle	123	3.637		
	Old	227	3.954		
Price	Young	38	5.408	5.117	0.006***
	Middle	123	4.950		
	Old	227	4.668		
Marketing Communications	Young	38	4.149	11.907	0.000***
	Middle	123	3.913		
	Old	227	4.594		

*** Significance at 0.01 level
** Significance at 0.05 level
* Significance at 0.1 level

Table 5.18: ANOVA (F-tests) Results Relating to Marital Status

Factor	Marital Status	No. of Respondents	Mean	F	Sig.
User-friendly Website	Single/Never Married	40	4.733	5.348	0.005***
	Married	277	5.361		
	Other relationships	71	5.248		
Internet Access/ Internet Familiarity	Single/Never Married	40	5.181	3.272	0.039**
	Married	277	5.631		
	Other relationships	71	5.896		
Convenience	Single/Never Married	40	5.293	2.578	0.077*
	Married	277	5.718		
	Other relationships	71	5.760		
Marketing Communications	Single/Never Married	40	4.767	4.867	0.008***
	Married	277	4.212		
	Other relationships	71	4.590		

*** Significance at 0.01 level
** Significance at 0.05 level
* Significance at 0.1 level

Table 5.19: ANOVA (F-tests) Results Relating to Qualification

Factor	Qualification	No. of Respondents	Mean	F	Sig.
User-friendly Website	Low	146	5.190	2.834	0.060*
	Middle	126	5.177		
	High	117	5.485		
Convenience	Low	146	5.618	2.735	0.066*
	Middle	126	5.567		
	High	117	5.888		
Marketing Communications	Low	146	4.586	6.282	0.002***
	Middle	126	4.341		
	High	117	4.020		

*** Significance at 0.01 level
* Significance at 0.1 level

Table 5.20: ANOVA (F-tests) Results Relating to Occupation

Factor	Occupation	No. of Respondents	Mean	F	Sig.
User-friendly Website	Professional	137	5.626	12.141	0.000***
	Sales	76	5.415		
	Retired	102	4.780		
	Others	73	5.164		
Internet Access/ Internet Familiarity	Professional	137	5.840	2.501	0.059*
	Sales	76	5.762		
	Retired	102	5.382		
	Others	73	5.495		
Perceived Risks	Professional	137	5.289	2.514	0.058*
	Sales	76	5.653		
	Retired	102	5.554		
	Others	73	5.441		
Word-of-Mouth	Professional	137	3.523	3.192	0.024**
	Sales	76	4.009		
	Retired	102	4.022		
	Others	73	3.804		
Price	Professional	137	5.091	4.731	0.003***
	Sales	76	5.013		
	Retired	102	4.443		
	Others	73	4.717		
Convenience	Professional	137	5.952	4.417	0.005***
	Sales	76	5.638		
	Retired	102	5.431		
	Others	73	5.585		
Marketing Communications	Professional	137	3.839	14.338	0.000***
	Sales	76	4.425		
	Retired	102	4.894		
	Others	73	4.402		

*** Significance at 0.01 level
** Significance at 0.05 level
* Significance at 0.1 level

Table 5.21: ANOVA (F-tests) Results Relating to Annual Income

Factor	Annual Income	No. of Respondents	Mean	F	Sig.
User-friendly Website	Low	163	4.945	12.785	0.000***
	Middle	120	5.429		
	High	98	5.612		
Price	Low	163	4.544	5.400	0.005***
	Middle	120	5.004		
	High	98	5.044		
Convenience	Low	163	5.410	8.376	0.000***
	Middle	120	5.823		
	High	98	5.954		
Marketing Communications	Low	163	4.652	13.137	0.000***
	Middle	120	4.349		
	High	98	3.827		

*** Significance at 0.01 level

Table 5.22: Scheffe Output for Age (Multiple Comparisons)

Scheffe	(I) Age	(J) Age	Mean Difference (I-J)	Sig.
User-friendly Website	Young Age	Middle Age	-0.007	1.000
		Old Age	0.387	0.152
	Middle Age	Young Age	0.007	1.000
		Old Age	0.394	0.009***
	Old Age	Young Age	-0.387	0.152
		Middle Age	-0.394	0.009***
Word-of-Mouth	Young Age	Middle Age	-0.260	0.607
		Old Age	-0.577	0.064*
	Middle Age	Young Age	0.260	0.607
		Old Age	-0.317	0.130
	Old Age	Young Age	0.577	0.064*
		Middle Age	0.317	0.130
Price	Young Age	Middle Age	0.458	0.218
		Old Age	0.740	0.012**
	Middle Age	Young Age	-0.458	0.218
		Old Age	0.282	0.206
	Old Age	Young Age	-0.740	0.012**
		Middle Age	-0.282	0.206
Marketing Communications	Young Age	Middle Age	0.236	0.607
		Old Age	-0.445	0.137
	Middle Age	Young Age	-0.236	0.607
		Old Age	-0.681	0.000***
	Old Age	Young Age	0.445	0.137
		Middle Age	0.681	0.000***

*** Significance at 0.01 level
** Significance at 0.05 level
* Significance at 0.1 level

Table 5.23: Scheffe Output for Marital Status (Multiple Comparisons)

Scheffe	(I) Marital Status	(J) Marital Status	Mean Difference (I-J)	Sig.
User-friendly Website	Single/Never Married	Married	-0.628	0.005***
		Other relationships	-0.515	0.074*
	Married	Single/Never Married	0.628	0.005***
		Other relationships	0.112	0.759
	Other relationships	Single/Never Married	0.515	0.074*
		Married	-0.112	0.759
Internet Access/ Internet Familiarity	Single/Never Married	Married	-0.450	0.172
		Other relationships	-0.715	0.039**
	Married	Single/Never Married	0.450	0.172
		Other relationships	-0.265	0.372
	Other relationships	Single/Never Married	0.715	0.039**
		Married	0.265	0.372
Convenience	Single/Never Married	Married	-0.425	0.094*
		Other relationships	-0.467	0.124
	Married	Single/Never Married	0.425	0.094*
		Other relationship	-0.042	0.963
	Other relationships	Single/Never Married	0.467	0.124
		Married	0.042	0.963
Marketing Communications	Single/Never Married	Married	0.555	0.041**
		Other relationships	0.177	0.788
	Married	Single/Never Married	-0.555	0.041**
		Other relationships	-0.378	0.090*
	Other relationships	Single/Never Married	-0.177	0.788
		Married	0.378	0.090*

*** Significance at 0.01 level
** Significance at 0.05 level
* Significance at 0.1 level

Table 5.24: Scheffe Output for Qualification (Multiple Comparisons)

Scheffe	(I) Qualification	(J) Qualification	Mean Difference (I-J)	Sig.
Convenience	Low Qualification	Middle Qualification	0.051	0.937
		High Qualification	-0.271	0.167
	Middle Qualification	Low Qualification	-0.051	0.937
		High Qualification	-0.321	0.096*
	High Qualification	Low Qualification	0.271	0.167
		Middle Qualification	0.321	0.096*
Marketing Communications	Low Qualification	Middle Qualification	0.245	0.296
		High Qualification	0.566	0.002***
	Middle Qualification	Low Qualification	-0.245	0.296
		High Qualification	0.321	0.152
	High Qualification	Low Qualification	-0.566	0.002***
		Middle Qualification	-0.321	0.152

*** Significance at 0.01 level
* Significance at 0.1 level

Table 5.25: Scheffe Output for Occupation (Multiple Comparisons)

Scheffe	(I) Occupation	(J) Occupation	Mean Difference (I-J)	Sig.
User-friendly Website	Professional	Sales	0.211	0.617
		Retired	0.847	0.000***
		Others	0.462	0.041**
	Sales	Professional	-0.211	0.617
		Retired	0.636	0.003***
		Others	0.251	0.588
	Retired	Professional	-0.847	0.000***
		Sales	-0.636	0.003***
		Others	-0.385	0.162
	Others	Professional	-0.462	0.041**
		Sales	-0.251	0.588
		Retired	0.385	0.162
Price	Professional	Sales	0.078	0.985
		Retired	0.648	0.007***
		Others	0.374	0.340
	Sales	Professional	-0.078	0.985
		Retired	0.570	0.069*
		Others	0.296	0.648
	Retired	Professional	-0.648	0.007***
		Sales	-0.570	0.069*
		Others	-0.274	0.657
	Others	Professional	-0.374	0.340
		Sales	-0.296	0.648
		Retired	0.274	0.657
Convenience	Professional	Sales	0.314	0.297
		Retired	0.521	0.007***
		Others	0.368	0.179
	Sales	Professional	-0.314	0.297
		Retired	0.207	0.698
		Others	0.053	0.994
	Retired	Professional	-0.521	0.007***
		Sales	-0.207	0.698
		Others	-0.154	0.856
	Others	Professional	-0.368	0.179
		Sales	-0.053	0.994
		Retired	0.154	0.856
Marketing Communications	Professional	Sales	-0.586	0.013**
		Retired	-1.055	0.000***
		Others	-0.562	0.022**
	Sales	Professional	0.586	0.013**
		Retired	-0.469	0.104
		Others	0.024	1.000
	Retired	Professional	1.055	0.000***
		Sales	0.469	0.104
		Others	0.493	0.085*
	Others	Professional	0.562	0.022**
		Sales	-0.024	1.000
		Retired	-0.493	0.085*

*** Significance at 0.01 level
** Significance at 0.05 level
* Significance at 0.1 level

Table 5.26: Scheffe Output for Annual Income (Multiple Comparisons)

Sheffe	(I) Annual Income	(J) Annual Income	Mean Difference (I-J)	Sig.
User-friendly Website	Low Income	Middle Income	-0.484	0.002***
		High Income	-0.667	0.000***
	Middle Income	Low Income	0.484	0.002***
		High Income	-0.183	0.482
	High Income	Low Income	0.667	0.000***
		Middle Income	0.183	0.482
Price	Low Income	Middle Income	-0.460	0.026**
		High Income	-0.500	0.022**
	Middle Income	Low Income	0.460	0.026**
		High Income	-0.040	0.978
	High Income	Low Income	0.500	0.022**
		Middle Income	0.040	0.978
Convenience	Low Income	Middle Income	-0.412	0.011**
		High Income	-0.543	0.001***
	Middle Income	Low Income	0.412	0.011**
		High Income	-0.131	0.699
	High Income	Low Income	0.543	0.001***
		Middle Income	0.131	0.699
Marketing Communications	Low Income	Middle Income	0.303	0.137
		High Income	0.826	0.000***
	Middle Income	Low Income	-0.303	0.137
		High Income	0.523	0.010*
	High Income	Low Income	-0.826	0.000***
		Middle Income	-0.523	0.010*

*** Significance at 0.01 level
** Significance at 0.05 level
* Significance at 0.1 level

Appendix: 1: Cover Letter

Faculty of Commerce

T 64 3 325 2811
F 64 3 325 3847
PO Box 84, Lincoln University
Lincoln 7647, Christchurch
New Zealand
www.lincoln.ac.nz

26 August 2010

Dear Sir/Madam

You are invited to participate in a survey that constitutes to part of my Master of Commerce and Management thesis at Lincoln University. The purpose of the thesis research is to identify the factors that consumers use when they decide to adopt or not adopt Internet banking services.

You have been randomly selected to participate in this research. While participation is voluntary, your participation is important as the success of this research depends upon receiving a thoughtful response from you. If you are 18 years or above, I would be extremely grateful if you would complete the attached questionnaire and return it in the enclosed pre-paid envelope by 31 October 2010. This survey will take approximately 10-15 minutes to complete.

Complete anonymity is assured in this survey. No questions are asked which would identify you as an individual and the identification number on the questionnaire is used for posting purposes and data analysis only. All responses will be aggregated for analysis using the identification number only, and no personal details will be reported in the thesis or any future publications. This research is completely voluntary and returning a completed questionnaire implies consent to participate in this survey.

If you have any questions about this survey, please contact me on 021 675 796 or by email at Junhua.Du@lincolnuni.ac.nz

This project has been approved by Lincoln University Human Ethics Committee. Thank you for your kind co-operation and assistance.

Yours Sincerely

Vivian J H Du
Master Student of Faculty Commerce
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Appendix 2: Questionnaire

NO. [ ]

A SURVEY OF CUSTOMERS ADOPTION OF INTERNET BANKING SERVICES IN THE NEW ZEALAND BANKING INDUSTRY

Only those 18 years or older are asked to complete the questionnaire

QUESTIONNAIRE

There are four sections in this survey. Please complete **SECTION ONE, SECTION FOUR,** and ***either*** **SECTION TWO *or* THREE** as per the instructions.

SECTION ONE

Please **TICK** the most appropriate box.

1. I am:

□ **Primarily an Internet banking user** - use Internet banking services for approximately 80% of my banking transactions.
Please go to **SECTION TWO**.

□ **Primarily a non-Internet banking user** - use telephone banking, or go to bank branches, for approximately 80% of my banking transactions.
Please go to **SECTION THREE.**

SECTION TWO

Please CIRCLE the number which most accurately reflects how strongly you agree or disagree with each statement. 7 you strongly agree, 1 you strongly disagree, 4 is neutral.

	Strongly Disagree			Neutral			Strongly Agree
1. Internet banking is convenient, in terms of time saving	1	2	3	4	5	6	7
2. Internet banking is convenient, in terms of 7 days and 24 hours services	1	2	3	4	5	6	7
3. In-branch banking involves too much queuing time	1	2	3	4	5	6	7
4. Internet banking makes it easier for me to do my banking	1	2	3	4	5	6	7
5. Using Internet banking services enables me to complete banking activities more quickly	1	2	3	4	5	6	7
6. Internet banking is a convenient way to manage my finances	1	2	3	4	5	6	7

Please turn the page and continue to complete SECTION TWO

	Strongly Disagree			Neutral			Strongly Agree
7. The bank's website enables me to move back and forth quickly between sections of the website	1	2	3	4	5	6	7
8. The transition of the bank's website has short waiting time	1	2	3	4	5	6	7
9. The bank website has a clear and easy guidance screen	1	2	3	4	5	6	7
10. Information displayed on the bank's website is clear, well organised, and easy to read	1	2	3	4	5	6	7
11. The positioning of information on the bank's website allows me to navigate effortlessly through the site	1	2	3	4	5	6	7
12. The search function within the bank website enables me to find the information I need	1	2	3	4	5	6	7
13. The website offers me enough information to answer my questions	1	2	3	4	5	6	7
14. The bank website is updated regularly	1	2	3	4	5	6	7
15. I can easily get access to the computer	1	2	3	4	5	6	7
16. I can easily get access to the Internet	1	2	3	4	5	6	7
17. Using the Internet is more accessible to me than visiting a bank	1	2	3	4	5	6	7
18. I have adequate computer skills	1	2	3	4	5	6	7
19. I am very skilled at using the Internet	1	2	3	4	5	6	7
20. I consider myself knowledgeable about using good search techniques on the Internet	1	2	3	4	5	6	7
21. Learning how to use Internet banking is easy for me	1	2	3	4	5	6	7
22. I find it easy to get Internet banking to do what I want to do	1	2	3	4	5	6	7
23. I am interested in the Internet banking services that banks promote	1	2	3	4	5	6	7
24. I use Internet banking because of bank promotions, such as bank staff promotions and advertising	1	2	3	4	5	6	7
25. My decision to adopt Internet banking was influenced by bank staff promotions	1	2	3	4	5	6	7

Please turn the page and continue to complete SECTION TWO

	Strongly Disagree			Neutral			Strongly Agree
26. I use Internet banking because of positive word-of-mouth	1	2	3	4	5	6	7
27. I use Internet banking because of my friends/family/colleagues recommendations	1	2	3	4	5	6	7
28. My decision to adopt Internet banking was influenced by my friends/ family/colleagues	1	2	3	4	5	6	7
29. I am confident with the security aspects of Internet banking	1	2	3	4	5	6	7
30. I feel safe providing personal information about my banking through the Internet banking	1	2	3	4	5	6	7
31. I trust that my bank provides security protection (technology) to prevent unauthorized intrusion	1	2	3	4	5	6	7
32. Internet banking is just as secure as traditional banking	1	2	3	4	5	6	7
33. In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money	1	2	3	4	5	6	7
34. There is a low risk that a transaction of transferring money or standing order may not be processed using Internet banking	1	2	3	4	5	6	7
35. I feel Internet banking is consistent with my self-image	1	2	3	4	5	6	7
36. I believe my friends/family will disapprove if I do not use Internet banking	1	2	3	4	5	6	7
37. Learning Internet banking does not involve too much time	1	2	3	4	5	6	7
38. It does not take me a lot of time to fix payment errors when carrying out my banking transactions over the Internet	1	2	3	4	5	6	7
39. Internet banking is not expensive to set-up	1	2	3	4	5	6	7
40. Internet banking offers lower services fees	1	2	3	4	5	6	7
41. The transactions in Internet banking are at a lower price, or at no cost...	1	2	3	4	5	6	7

Please go to page 6 and complete SECTION FOUR

SECTION THREE

Please <u>CIRCLE</u> the number which most accurately reflects how strongly you agree or disagree with each statement. 7 you strongly agree, 1 you strongly disagree, 4 is neutral.

	Strongly Disagree			Neutral			Strongly Agree
1. Internet banking is not time saving	1	2	3	4	5	6	7
2. Internet banking does not provide 7days and 24 hours services	1	2	3	4	5	6	7
3. In-branch banking does not involve too much queuing time	1	2	3	4	5	6	7
4. Internet banking does not make it easier for me to do my banking	1	2	3	4	5	6	7
5. Using Internet banking services does not enable me to complete banking activities more quickly	1	2	3	4	5	6	7
6. Internet banking is not a convenient way to manage my finances	1	2	3	4	5	6	7
7. The bank's website does not enable me to move back and forth quickly between sections of the website	1	2	3	4	5	6	7
8. The transition of the bank website is involves too much waiting time	1	2	3	4	5	6	7
9. The bank's website is unclear and does not have an easy guidance screen	1	2	3	4	5	6	7
10. Information displayed on the bank website is unclear, unorganised, and hard to read	1	2	3	4	5	6	7
11. The positioning of information on the bank website does not allow me to navigate effortlessly through the site	1	2	3	4	5	6	7
12. The search function within the bank website does not allow me to find the information I need	1	2	3	4	5	6	7
13. The website does not offer adequate information to answer my questions	1	2	3	4	5	6	7
14. The bank website is not updated regularly	1	2	3	4	5	6	7
15. I cannot easily get access to the computer	1	2	3	4	5	6	7
16. I cannot easily get access to the Internet	1	2	3	4	5	6	7
17. Using the Internet is less accessible to me than visiting a bank	1	2	3	4	5	6	7
18. I do not have adequate computer skills	1	2	3	4	5	6	7
19. I am not very skilled at using the Internet	1	2	3	4	5	6	7
20. I do not consider myself knowledgeable about good search techniques on the Internet	1	2	3	4	5	6	7
21. Learning how to use Internet banking is difficult for me	1	2	3	4	5	6	7
22. I find it difficult to get Internet banking to do what I want it to do	1	2	3	4	5	6	7

Please turn the page and continue to complete SECTION THREE

	Strongly Disagree			Neutral			Strongly Agree
23. I am not interested in the Internet banking services that banks promote	1	2	3	4	5	6	7
24. I do not use Internet banking because I am not aware of any bank promotions, such as bank staff promotions and/or advertising	1	2	3	4	5	6	7
25. Bank staff promotions do not influence my decision to adopt Internet banking	1	2	3	4	5	6	7
26. I do not use Internet banking because of negative word-of-mouth	1	2	3	4	5	6	7
27. I do not use Internet banking because my friends/family/colleagues do not recommend Internet banking to me	1	2	3	4	5	6	7
28. My friends/family/colleagues do not try to persuade me to use Internet banking	1	2	3	4	5	6	7
29. I am not confident with the security aspects of Internet banking	1	2	3	4	5	6	7
30. I do not feel safe providing personal privacy information through Internet banking	1	2	3	4	5	6	7
31. I do not trust that the bank provides security protection (the technology) to prevent unauthorized intrusion	1	2	3	4	5	6	7
32. Internet banking is not as secure as traditional banking	1	2	3	4	5	6	7
33. In the event that my online bank account has been hacked into and my money stolen, I am not confident that the bank will help me to recover my money	1	2	3	4	5	6	7
34. There is a high risk that a transaction of transferring money, or standing order, may not be processed using the Internet banking	1	2	3	4	5	6	7
35. I feel Internet banking is not consistent with my self-image	1	2	3	4	5	6	7
36. I believe my friends/family will disapprove if I use Internet banking	1	2	3	4	5	6	7
37. Learning Internet banking involves too much time	1	2	3	4	5	6	7
38. It will take me a lot of time to fix payment errors when carrying out my banking transactions over the Internet	1	2	3	4	5	6	7
39. Internet banking is expensive to set-up	1	2	3	4	5	6	7
40. Internet banking has higher services fees.	1	2	3	4	5	6	7
41. The transactions in Internet banking are expensive.	1	2	3	4	5	6	7

Please go to page 6 and complete SECTION FOUR

SECTION FOUR

Please <u>TICK</u> the most appropriate box.

1. What is your gender?

□ Male □ Female

2. Which is your age group?

□ 18-24 □ 25-30 □ 31-35 □ 36-40

□ 41-45 □ 46-50 □ 51-55 □ 56-60

□ 61-65 □ 66-70 □ 71-75 □ 76+

3. What is your marital status?

□ Single/Never Married □ Married

□ De facto relationship □ Divorced/Separated

4. What is your highest educational or professional qualification?

□ Primary Education □ Secondary Education □ Fifth Form Certification

□ Bursary □ Trade Qualification □ Diploma/Certification

□ Bachelor Degree □ Postgraduate Degree □ Other (please specify)_____

5. What is your occupation?

□ Professional □ Tradesperson □ Student □ Clerical

□ Labourer □ Farmer □ Unemployed □ Retired

□ Sale/Services □ Home maker □ Other (please specify)_____

6. What is your personal annual income before tax? (NZ dollar in the last year)

□ Under $10,000 □ $10,000-$19,999 □ $20,000-$29,999

□ $30,000-$39,999 □ $40,000-$49,999 □ $50,000-$59,999

□ $60,000-$69,999 □ $70,000-$79,999 □ $80,000-$89,999

□ $90,000-$99,999 □ $100,000-$120,000 □ $120,000 +

Thank you very much for your valuable assistance in this research.
Please return the survey in the prepaid envelope by the 31 October 2010.